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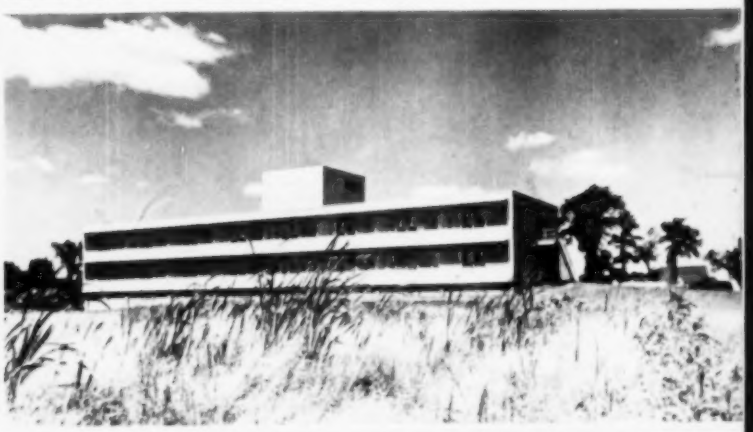

hospital construction

11

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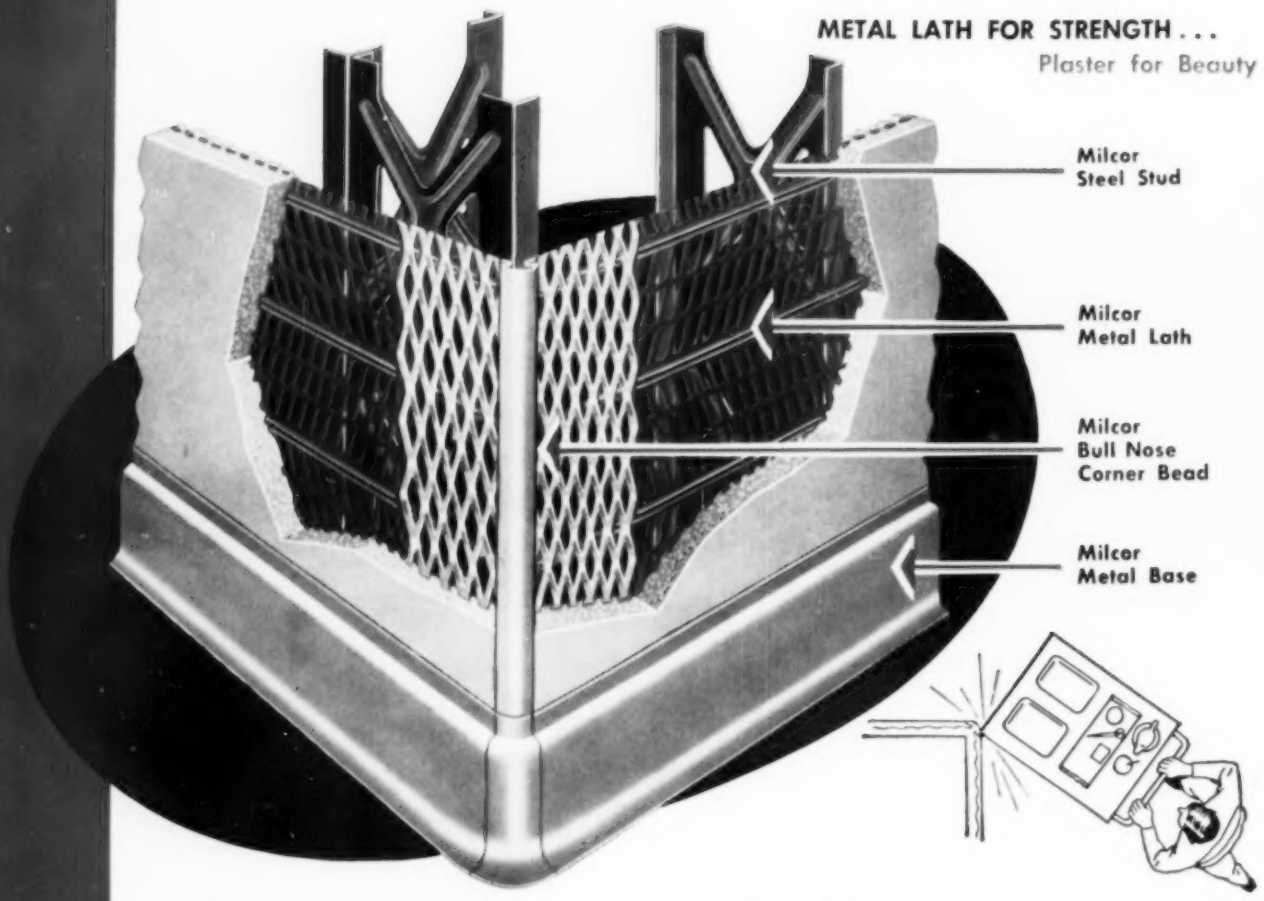

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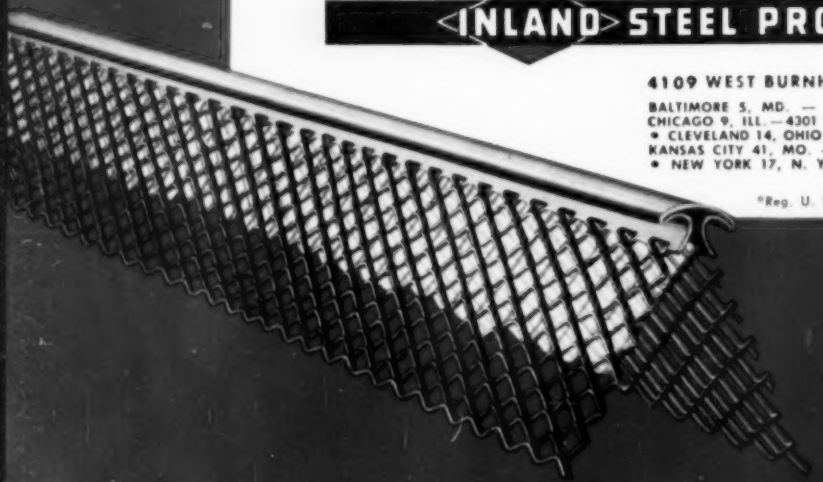

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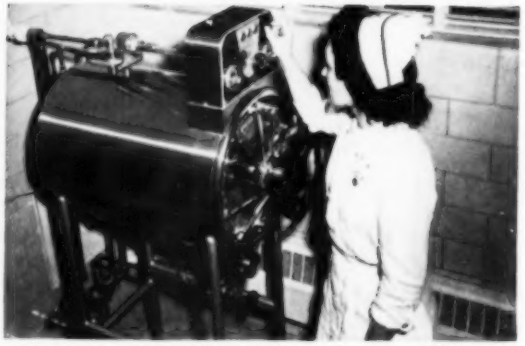

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p/a newsletter

November 1953

Eric Mendelsohn, pioneering architect who accomplished important work on Continent, in England, Israel, and, since 1941, in U.S., died in San Francisco, September 15. Feeling for plastic forms and delicate sense of scale marked his designs, through Maimonides Hospital in San Francisco and recent synagogues in half-dozen U.S. cities. For some years, Mendelsohn has been on faculty of University of California; at his request, Dean William W. Wurster of that school delivered eulogy.

Advisory Committee on Government Housing Policies and Programs, established by executive order, September 12, will advise President on role Federal Government should take in meeting nation's housing needs. Series of studies and surveys will be made or directed by the group and recommendations will cover such subjects as slum clearance, community redevelopment, aid to public low-rent housing, mortgage insurance, and supervision of home-financing institutions. HHFA Administrator Albert M. Cole will head Committee. Among other members named are former AIA President Ralph Walker and Los Angeles Architect and City Planning Commission Member Paul R. Williams. Carl Feiss, P/A columnist, has been named staff assistant.

Record level for new construction expenditures was maintained in August, according to Departments of Commerce and Labor. Dollar volume was up about 7% from total for August, 1952. Again, commercial building showed greater-than-seasonal increase, while dollar outlays for private housing declined for second successive time.

Stevens Development Corp. recently released further plans for Boston's $75-million Back Bay Center Development. Shopping center will include 40-story office building, three smaller office buildings, 4-story department store, plus 3-story mercantile building for large and small stores. There will also be a 750-room combination hotel-motel, supermarket, underground garage area—and convention hall located west of the Center.

U. S. Steel Chairman Fairless predicted steel operations will average about 95% of capacity for remainder of this year. Prediction was made in answer to those who have become pessimistic over decline of steel output, from full capacity to somewhat above 90% in past several months.

Federal Reserve Board reports five millions more homeowners in last five years. In North Central states, 64% of all residents live in own homes, while proportion is lower in other parts of country—West (57%), South (50%), Northeast (44%).

Rear Admiral Joseph F. Jelley, Jr., USN, has been named Director of Construction in Office (Properties and Installations) of Assistant Secretary of Defense Franklin G. Floete. He will assume new duties at end of present term as Chief of Bureau of Yards and Docks, Department of Navy.

Hooper Fellowship in hospital planning, at Yale, has been awarded this year to Avery Coonley Faulkner, son of Washington architect Waldron Faulkner, of Faulkner, Kingsbury & Stenhouse. Sponsors report that this Fellowship, now five years old, is producing "surprisingly good results."

Turn page for WASHINGTON PERSPECTIVE

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ABP

AUDITED PAID CIRCULATION ABC

Frederick Gutheim

Washington Perspective

Enthusiastic champions of private architects in the conduct of public building activities might do well to take a look at the Department of State, where a group of unfrocked architects and bureaucrats are now busily establishing a new "design bureau" among the ruins of the best architectural program ever put together in a government agency —the Foreign Buildings Operations (FBO) of the Department of State. In support of this sweeping statement, I offer the caliber of the architects who have previously been engaged, and the results of their work. A recent opportunity to see a great deal of our building program in Europe convinced me that an extraordinary job has been done by the branch of this organization headed by Alan B. Jacobs, in FBO's Paris office. It may not be the kind of architecture I prefer, but personal taste aside, what Gordon Bunshaft, Eero Saarinen, Ralph Rapson, and the members of Jacobs' design team have done is infinitely superior to other public buildings programs—of our own or of foreign governments. (Look at the Coronation Issue of "The Architectural Review"!)

The principal work in this program is embassies, consulates, and other office buildings, and some housing. Projects have been completed, or are under construction, in Copenhagen, Madrid, Paris, LeHavre, Marseilles, and other major cities. The Skidmore office has executed a very large program in Germany. Among further projects—now in jeopardy—is a new embassy in Athens, whose bold design is not to the taste of State Department officials in Washington but which has the support of nearly everyone else including our ambassador and—the Greeks.

The Foreign Buildings Operations program was put together shortly after the end of the war as a $220 millions package of buildings from Iceland to Saigon. Half of this represented foreign currencies, the balance Congressional appropriations. Today the program still has authorizations totaling $90 millions. The question now is whether future foreign buildings shall be designed on drafting tables in Washington, or by a regional office which has shown rare discrimination and imagination in the use of American architects in private practice, as architects of record, as consultants, as employes (on occasion) and in other ways. Any architect who thinks the issues raised here are simple black-and-white ones would do well to take another look.

There isn't much argument that important public buildings, in this case embassies, should be designed by architects in private practice. From the public's viewpoint this isn't a question of professional right and wrong. It's simply a matter of getting the best architects. But it is not so well understood, either among the profession or the public, that private architects can be freely selected, jobs rotated, and assignments made to the best available offices, only when there is some way of backing up the design performance. The best answer is not private or public architects, but some appropriate combination of them.

Here one might be specific. The small jobs aren't attractive to topflight firms. PBS Commissioner W. E. Reynolds hazarded a guess for me last year that the private architect begins to be worth engaging when the building costs something more than $150,000. Overseas, it's a bit higher (around $250,000 Alan Jacobs told me last summer). Both men agree that there is a middle ground where some forms of partial architectural service, consultant service, and the like, are probably the best answer. Even the big jobs present their problems.

The Foreign Buildings Operation has its own peculiar conditions of language, climate, customs, laws, local building conditions, and the like, which no private architect can be expected to have, or to acquire, for a single project. Nor are foreign architects the answer, although they have been consulted, in many cases, and associated, in some. Foreign building also has what is common to other public work: the specialized departmental requirements. A judicious balancing of these factors in making up the architectural team is the trick—not finding the architectural superman. In the FBO it may not have taken imagination to pick Eero Saarinen to design an addition to our embassy in Helsinki, but it showed good judgment of the sort once noted by a distinguished defender of General Patton who said, "His place is on the moving flank."

Such discrimination and such use of the private architect, I am convinced, is imposed upon us by the scale of many building operations today, and the requirements of what might be termed "the corporate client," whether the New York Life Insurance Company or the Department of State.

A bold and successful venture in this direction is now jeopardized. It is not so much what is implied by the recent engagement of a conservative Boston firm to study embassy building problems in London, as by the decision to centralize all design decisions in Washington. There no prospect exists that a man of the caliber of Leland W. King, recently relieved as director and supervising architect of all projects for FBO, or of his predecessor, Frederick Larkin, will be in charge of the work. Rather there is the likelihood that non-professional administrative types, with all the resulting timidity and compromise which they bring to building decisions, will be in charge. But the vagaries of appointments aside—and individuals in public office seldom have the power or the influence attributed to them—the centralization is wrong in principle. This is not the atmosphere in which good design is produced. Still less is it the background for the creative collaboration among all the varied elements who must be concerned with architectural design—and which alone is likely to produce great public architecture.

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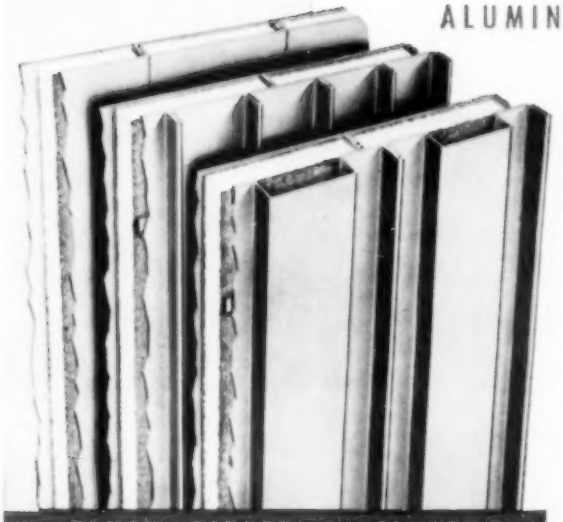

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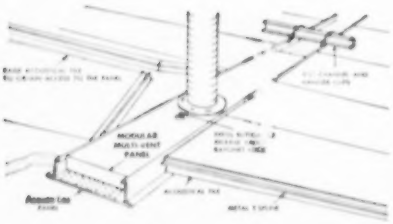

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PROGRESSIVE ARCHITECTURE

November 1953

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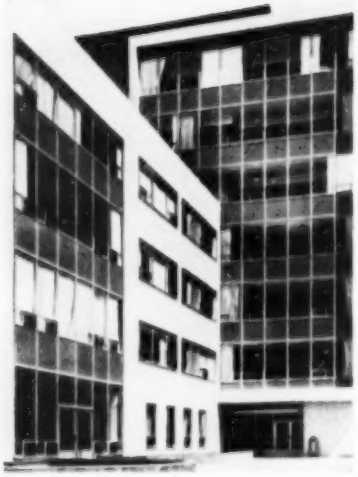

Children's Orthopedic Hospital, Seattle, Washington.
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learned the hard way

Dear Mr. Tomson: Your 11's THE LAW column in September 1953 P/A is intensely interesting and brings up many points that need clarification. The first of next January I will complete 43 years of practice, during which time I have learned several things the hard way.

I enclose General Conditions, Contract, and Bond which indicate my beliefs and those of my attorney.

Article 37 requiring contractor to pay subcontractor proportionately as contractor is paid is reinforced by statement in Article 58, "It is further agreed by the contractor that all payments made to him for or on account of the erection and completion of the work to which this specification relates, will be received and held in trust, and as a bailee, for the express use and purpose of paying in full (less agreed credits) for all such items and that no title to any payment, nor any part thereof, shall vest in him until all such items have been paid for in full, less agreed credits."

Article 24 calling for receipts and vouchers "if required" is correct. The vast majority of transactions go through to completion without any trouble. Why assume another responsibility? You are armed with necessary weapons for use if needed.

As to what the owner expects, there are about 100 different expectations for each different owner, for which reason an explicit detailed contract with the owner is necessary.

Regarding insufficiency of the 10% withheld, if the architect exercises due diligence under Arts. 24, 25, 26, 56, the 10% (15%) is sufficient. Of course the schedule of values submitted according to Art. 24 will have to be checked against the architect's estimate and various subbids, etc., and frequently a battle follows and then a revision to squeeze the water out of items completed quickly and get a sufficient allotment for the last ones. Estimates will have to be checked on basis of "value of work done proportionate to the contract" (see Art VI of Contract), not on "*cost of work in place*" (lest the contractor has underestimated the job) nor on *percent of physical volume* completed (lest the last 10% of volume requires 90% of the expense). The time of completion will have to be checked, demurrage approximated and withheld in accordance with the next to last paragraph of Art. IV of the contract.

Regarding your statement "the 10% is intended to cover possible claims for defective work," I am afraid you have been misinformed. I cannot visualize the AIA as intending to inform the world that the products of our education, experience and labor are so inferior as to cause us to complacently contemplate in advance a 10% defective result, and to assume that the contractor should guarantee our competence.

Regarding audits: On the average, the architect is not equipped by inclination, or experience, to become a bloodhound sniffing out a possible crook amongst the contractors on his work. Most of us have all the trouble we need in making clear, complete, concise, definite set of plans and specifications that can be fairly interpreted by an intelligent mechanic without the aid of a lawyer and a mind reader. Let's leave the auditing to the contractors, their bankers, and the bonding companies.

FRED HALSEY
Texarkana, Ark.-Tex.

read with interest

Dear Mr. Tomson: I have read with interest your proposed articles in P/A having to do with the extent of an architect's duties in supervising the activities of a general contractor, particularly the use by the general contractor of the owner's payments to him in payment of amounts due under subcontracts.

I think that the points that you make in the article are well worth making at this time and hope that they will be further studied by the architectural profession. Of course they apply particularly to lump-sum contracts since the application of the owner's funds to the payment of subcontracts under a cost-plus contract is generally taken care of adequately under the current auditing procedures.

THOMAS M. GREEN, Vice President
R. H. Macy & Co., Inc.
New York, N. Y.

important subject

Dear Editor: We were very glad to attend P/A's discussion of subjects covered in Bernard Tomson's articles for P/A in September, October, and November 1953 issues, largely devoted to "supervision of the contractors"; and also to read later the articles themselves. We found this discussion very enlightening, and we believe the articles themselves can do a great deal of good by calling the attention of architects to important legal and financial matters which may sometimes be neglected.

In our office we formerly used none of the standard documents. We noted as time went on that not only were builders more acquainted with the standard documents, but also that we could generally adapt them to our use by making such modifications as we saw fit for particular jobs. Occasionally we still run into a set of conditions where we develop special documents, but this is a rare exception. Therefore, we would say, first of all, that if the standard documents should be amended, by all means refer the matter to the proper Institute Committee, but if the same are not amended, the individual practitioner will modify them as he sees fit in his practice.

As was stated at the conference, we do not see that there is any problem with contracts handled on the cost-plus systems. In such cases, we ask for all of the supporting papers; that is subcontractor's requisitions, receipts, payroll data, material bills, delivery stubs, cancelled checks, and the like, and check these documents. We reserve the right for the owner to audit the contractor's books on a monthly basis, or before the final payment, and many owners carry out such audits.

(Continued on page 10)

p/a views

(Continued from page 9)

When it comes to the matter of the lump-sum form of contract, then it may be admitted that there is room for a slip-up as such jobs are usually carried out. We ask for the usual schedule of values for the various parts of the work, checking same for proper allocation to the trades. The contractor usually bases his requisitions on percentages of completion in the various categories; and we require an affidavit stating there are no liens against the job, and the contractor further stating that he has paid to all subcontractors the percentage of their contract requirements approved by us. This is followed at the end of the job by the usual release of lien of the contractor, subcontractors, and material men. We approximate the value of work done, and the value of work remaining in arriving at our certification.

If the contractor falsifies his affidavits, and if subcontractors are stalled off for a few months, or if major subcontractors play along with a general contractor for a while, then it is true that the contractor can create an unsafe condition. Our experience has been, however, that subcontractors are pretty well posted on the conditions surrounding their contractors and they check up quite quickly. We have noticed that sometimes when a general contractor holds back a sub's money purposely to force a correction, for example, that the subcontractor has checked up to see if the general contractor has received the money. Sometimes when a general contractor's requisition has been held up for some reason or other, again the subs have checked to see if he had received his money.

To get around the condition noted above, an audit of the books may be needed, but when a contract is carried out on a lump-sum basis, a general contractor has the right to refuse the details of what is his private business. Sometimes contractors have been willing to furnish the same data as under a cost-plus contract, but we can readily understand that under highly competitive conditions, it is unlikely. We feel, therefore, that any attempt to force through the standard documents the auditing generally of general contractors' books on lump-sum contracts will not get very far, unless the general contractors themselves are approached through their national and local bodies, and are agreeable to the same.

If general contractors should be agreeable to the proposal, then the proper auditing of their books would certainly greatly aid in the elimination of the dangers noted by you. If they are not agreeable, then the safeguards now taken, together with a study of the contractor's background represents about what can be done. An owner understands a contractor may go bankrupt, and the situation surrounding a certification without an audit must be made clear to him. An architect in this deal must primarily see that the contractor is not overpaid, based on what

(Continued on page 12)

PROTEXOL PROTECTS WOOD

NOTE: This is one of a series of advertisements designed to be of service to Architects, Builders and Owners, to establish practical problems in the treatment of lumber to not only meet Building Code requirements, but also to present the availability of pressure treatments designed to overcome the inherent vulnerability of wood, thereby assuring greater value wherever wood is used.

PROBLEM:

To incorporate the utmost in safety and still preserve the warmth and beauty found only with wood.

EXAMPLE:

Executive Offices, 21st Floor, Lever House, New York. Architects: Skidmore, Owings & Merrill. Owner: Lever Bros., Inc.

SOLUTION:

To employ pressure-treated wood to meet the problem and its ramifications, the Architects concluded that the most satisfactory answer resolved itself in the use of pressure-treated lumber that is

FIRE-PROTECTED By

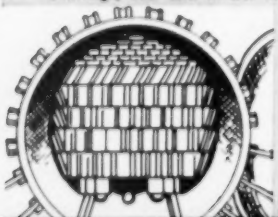
"PROTEXOL A"

To assure equally dependable results, the following specifications is suggested:

SPECIFICATION: (A.I.A. File #19-A-33)

"PROTEXOL A" . . . Fire retardant wood, plywood, trim finish and flooring.

All wood or plywood shall receive a vacuum-pressure (full cell) fire retardant treatment which will satisfactorily meet the regulations for inspecting fire-proofed wood used by the Engineering Laboratories of Manhattan College, New York City, for the shavings, crib and timber tests; or Military Specification C-2799, Type H, Class 2, Para. E-2b; or Military Specification P-66A . . . All wood or plywood after treatment shall be kiln dried to a moisture content not to exceed 10% plus or minus 3%.



It is the intent of these specifications to require a treatment that will assure permanency, non-corrosiveness, and fire retardant chemicals equal to "Protexol A" as offered by the Protexol Corporation, Kenilworth, N. J.

See us in Sweet's — or contact our nearest office

PROTEXOL CORPORATION

76 MARKET STREET KENILWORTH, N. J.

NEW YORK CHICAGO

ST. LOUIS SAN FRANCISCO LOS ANGELES

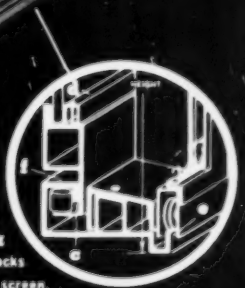
Top Roller-Hung

(a) overhead stainless steel ball bearing roller moves on precision track without side-play (b) spring-loaded upper ball bearing roller guide for easy screen installation.

STEELBILT

where design incorporates sliding glass doorwalls Steelbilt's patented TOP ROLLER-HUNG frames offer decided advantages: threshold is flush with inside floor—and leakproof without auxiliary weatherstripping . . . all sliding mechanism is housed and weather protected . . . sliding action is incomparable.

Write for details on Steelbilt's top and bottom roller types with matching windows. Also ask for "Steelbilt & The 1953 Case Study House," a 20-page editorial reprint from the magazine Arts & Architecture.



(c) weathertrap sill design is leakproof (f) finish sill line flushes with inside floor (d) rocker-type glazing bead with screw adjusted spring action (e) factory installed screen tracks for bottom rolling screen.

Steelbilt, Inc.

Gardena, California

GENERAL OFFICES OF CONSOLIDATED BUILDERS, INC., BEVERLY HILLS, CALIFORNIA • EDWARD H. FICKETT, A.I.A., ARCHITECT

p/a views

(Continued from page 10)

he has done, and what remains. If the owner in this case is unhappy, he may ask for a bond. You have noted that bonding institutions may also fail. This is, of course, too true. However, a situation in which a carefully selected contractor falsifies his affidavits, in which no subcontractors raise a question, in which the general contractor then goes bankrupt, followed by the failure of a bonding company, would certainly be a most unusual one. It would certainly be possible with a general financial debacle, but otherwise would be most unlikely were the steps indicated taken with due care.

We believe your articles will have a useful and salutary effect *even* if no changes are made in any documents. They should stimulate discussion and consideration, and as noted in opening, cause renewed attention to these important matters.

JAMES B. NEWMAN
Kahn & Jacobs
New York, N. Y.

realistic limitations

Dear Editor: I found the Tomson articles extremely interesting. While I cannot speak officially for the Institute's "Committee on Architectural Practice," I can report from my personal point of view, that the subject is extremely pertinent.

I have always felt a pang of apprehension each time I was required to sign a certificate of payment, in spite of the conscientious attempts we have always made to determine the value of the work completed by the contractor. I believe it is extremely dangerous to leave the client with the impression that his interests are being fully protected without reservations and I have always gone out of my way to impress on the client, the realistic limitations of the architect's responsibility in issuing certificates of payment.

I know that customary practice has been the controlling factor in the taking of these risks but there is a quotation in the *Institute's Handbook on Architectural Practice* which seems to me to be extremely dangerous in stating: "The valuation of work forming the basis of a certificate for payment should be regarded as one of the Architect's more serious duties, not merely because a failure correctly to value it must do some injury, even if only for the time being, to the Owner or the Contractor, but because in cases where a loss has fallen on one of them on account of an inaccurate valuation, the Architect has been held liable for the full amount of the loss."

I think that this whole document must be reviewed to make it more realistic and to see that the architect is never put into a position of having to assume risks which it is impossible for him to eliminate conscientiously in the owner's interest.

P/A is doing a great service to the profession through this type of analysis.

DANIEL SCHWARTZMAN
New York, N. Y.

(Continued on page 20)

Clinical Center, National Institutes of Health
Bethesda, Maryland
Von Duprin
Protects millions of lives . . . daily!
O'Connor Hospital, San Jose, Calif.
Maguolo & Quick, Frank T. Georgeson, Architects - Engineers

● Hundreds of hospitals from coast to coast are equipped with Von Duprin exit devices —And for good reason! Since Von Duprin originated this "safe exit" device more than 40 years ago, Von Duprin devices have been constantly refined and improved to earn the confidence and trust of millions of people.

Peace of Mind and Security of both patients and staff—these are the advantages of safeguarding your hospitals with Von Duprin—"the *safe* way out!"

Ease and safety combined

VONNEGUT HARDWARE CO. • VON DUPRIN DIVISION • INDIANAPOLIS, INDIANA

with Columbia-matic TENSION SCREENS

GIVE THE HOMES YOU DESIGN the benefit of better screening protection. Columbia-matic Tension screens are the newest, safest, most modern way to screen a double-hung window. They are the only screens on the market offering automatic tension! And, they cost less than old-fashioned, carpenter-fitted, wooden screens. Columbia-matics are the perfect complement to modern double-glazed windows.

These are the Columbia-matic features home buyers go for:

Save time—Easy to put up and take down from inside. Anyone can do it in seconds. Easily swings free for dusting sill or washing window.

Save work—No more struggling with clumsy wooden frames or ladders. Columbia-matics have top and bottom rails only. Roll up for compact storage.

Save money—All rustproof aluminum. No drip stains on house. No painting, maintenance. Full-length aluminum mesh gives complete insect protection.

Only Columbia-matic gives AUTOMATIC TENSION

Patented bottom rail is spring-loaded . . . automatically puts right amount of tension on screening. Keeps it drum-tight to blind stops at all times . . . automatically compensates for unevenness in sill; temperature changes. Screen can't sag or ripple. Easy-open tension locks anchor screen firmly; flip up to open. Side-mounted, no hardware on sill to snag clothing. Another Columbia-matic exclusive.

Here's how Columbia-matics save on initial cost:

Precut to specification. Perfect fit assured. No fitting. Can't swell, stick, warp. All rustproof aluminum.

Easily installed. Ready to mount from inside. Only 7 screws. No template.

Cost less than ordinary, full-length screens. Installation time is cut to a fraction of that for wooden screens. Takes an inexperienced man less than 5 minutes. No painting.

16,000 Columbia-matics!

Mr. Clifford O. Boren, President, San Diego Building Contractors' Association, says:

. . . "We have used 16,000 Columbia-matic Screens in our Redwood and Hubner developments. We have found them completely satisfactory. Not only do our customers like them, but they save us considerable on installation costs . . ."

Clifford O. Boren
President,

Clifford O. Boren Contracting Co., Inc.

Get the facts on Columbia-matics NOW

Columbia Mills, Inc.
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Please send complete details and specifications on Columbia-matic Tension Screens.

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WHO SAID AIR IS FREE?

Multiple accordion aluminum as it comes compactly from package contains very little air:—

As installed creates five additional layers of "free" air.

Air is a good insulating medium. Were it not for Radiation and Convection, empty air spaces inside walls, roofs, etc. would be the best building insulation. But why pay costly labor, freight and storage bills for handling "free" air entrapped in bulky insulation **before** it is used? Bulky materials also require more freight cars, trailers and trucks. The "free" air is paid for over and over again.

Multiple accordion aluminum envelops large volumes of air **only** as it is opened when finally installed. This air is **really** free. Compartmentizing as it is stapled in place, the aluminum and fiber sheets **create** alternating layers of air spaces.

With respect to radiant heat flow, the aluminum sheets have 97% reflectivity, and 3% absorptivity and emissivity. Low conduction results from the preponderant air spaces of low density. The layers of multiple aluminum and fiber retard inner and outer convection. The thick, tough aluminum sheets are impervious to vapor flow. Infiltration under flat stapled flanges is slight. Condensation formation on or within is minimized by the scientific construction of multiple layers of joist-to-joist accordion aluminum, fiber, and air spaces.

Because of the low mass of unopened, practically airless multiple accordion aluminum, an ordinary passenger automobile will hold 20,000 sq. ft. of it without being or even looking overloaded. A standard railroad freight car, a huge interstate trailer, or a number of trucks would be needed to transport an equivalent amount of ordinary insulation.

A *new multiple accordion aluminum, Infra, Types 6-S*i*, and 4-S*i*, gives **complete** insulating coverage between beams and studs, forming a "blanket" of uniform thickness against heat and vapor flow, and condensation.

The American Society of Heating Ventilating Engineers has published a booklet which describes convection, conduction, and radiation heat flow through *ordinary* air spaces and what happens when an ordinary building space is lined or subdivided by reflective metals, thus creating reflective air spaces. Ask us for a copy — it's free.

*Patent applied for

COST OF INFRA INSULATION INSTALLED
in new construction between wood joists, material with labor,

Type 6-S*i* under 9½¢ sq. ft.
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525 Broadway, New York, N. Y., Dept. P-11.

☐ Please send ASHVE booklet "Insulating Effect of Successive Air Spaces Bounded by Bright Metallic Surfaces."
☐ Please send description of new Infra Insulation.
☐ Please send samples.

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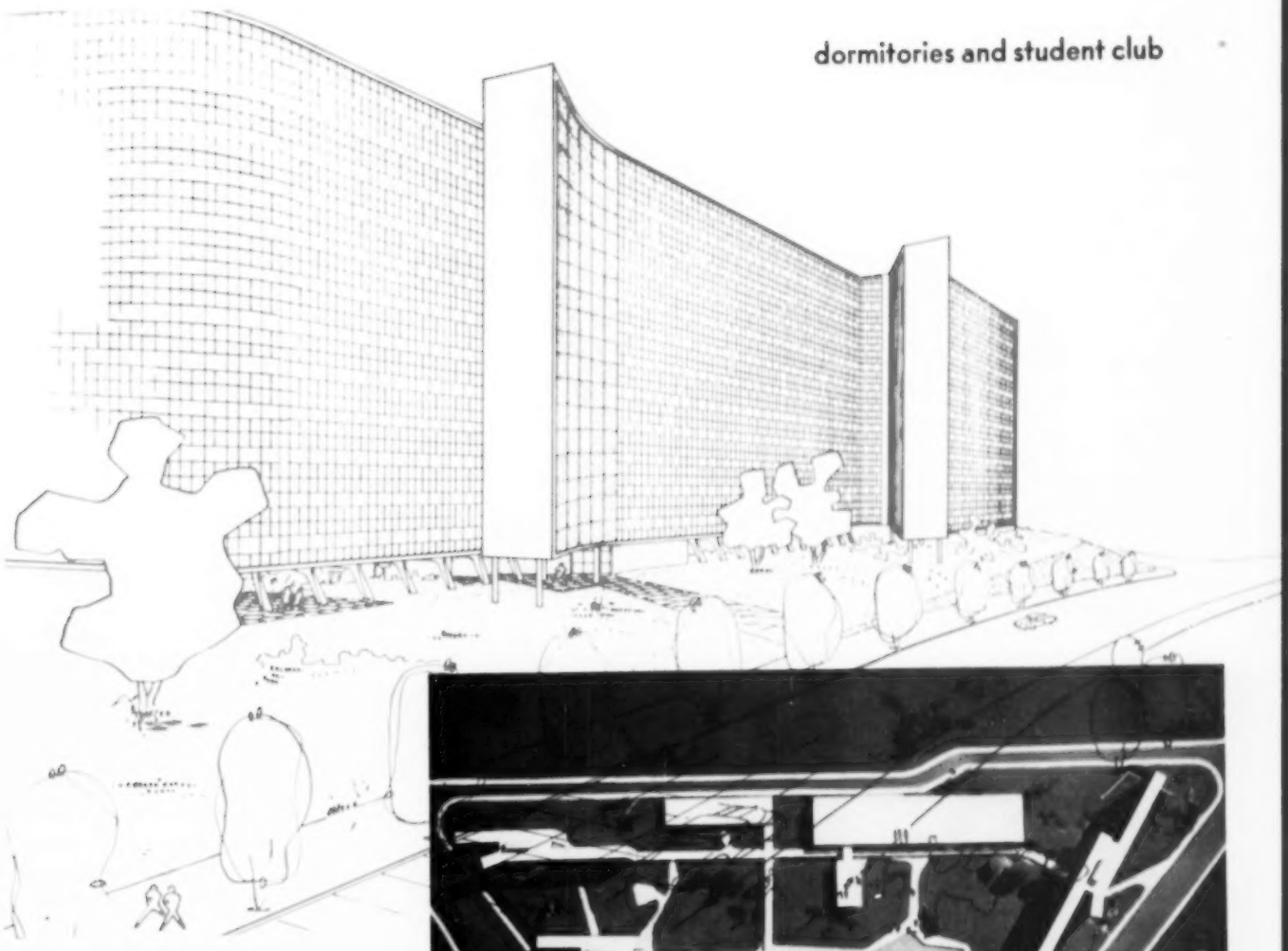
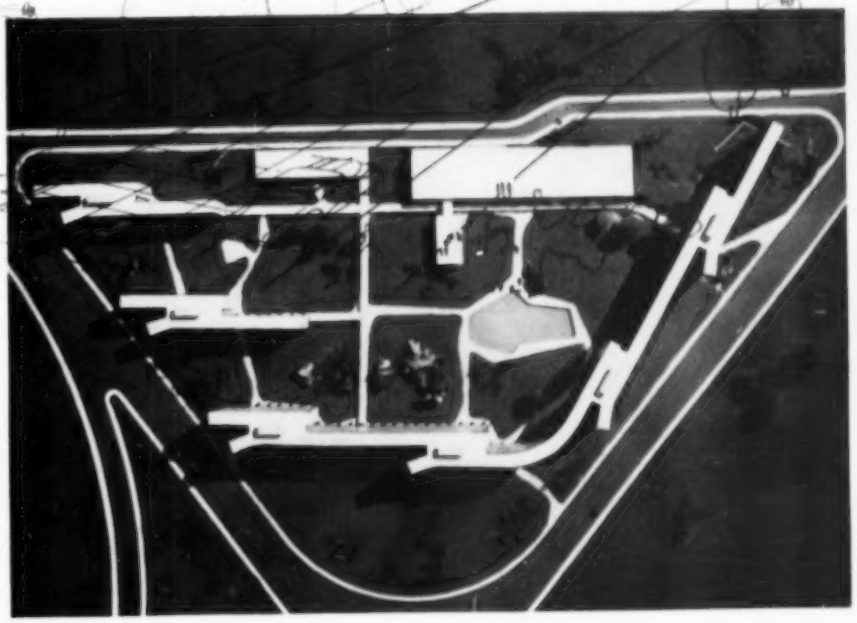
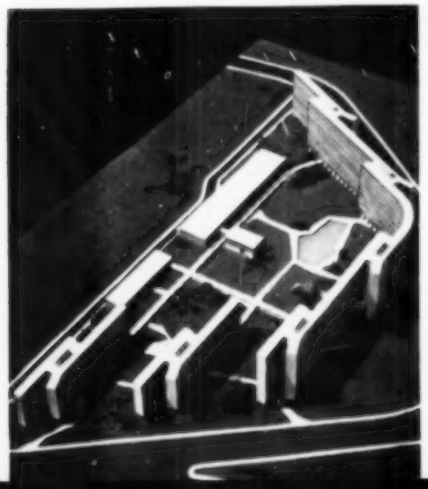
INFRA INSULATION, INC., 525 BROADWAY, NEW YORK, N. Y.

dormitories and student club





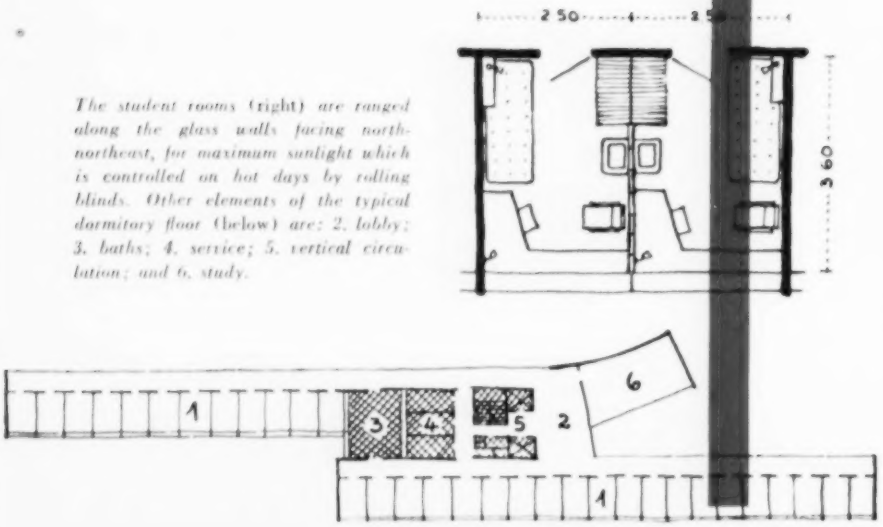
Representative of the buildings being built for the new University City in a hilly area outside São Paulo, Brazil, is this group of dormitories with adjacent club building, designed by Rino Levi and Roberto Cerqueira Cesar. Photos: Albuquerque

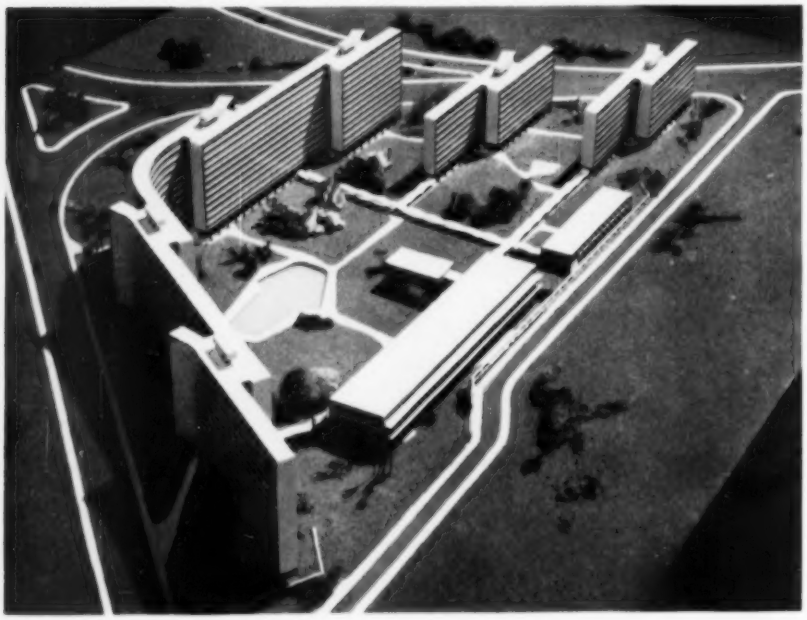


The student residence buildings now being built for the new University of São Paulo, Brazil, were designed by Rino Levi, architect, and Roberto Cerqueira Cesar, associate architect, following a general program stated by the supervising commission of the university. Located on the outskirts of São Paulo, the site of the student residence group is a hillside commanding an exceptionally fine view of the city.

Placed near the entrance of the main university building and approximately between the teaching and recreation areas, this group consists of four 12-story dormitories for men (51 single rooms per floor) and two 8-story dormitories for women (32 single rooms per floor) form-

The student rooms (right) are ranged along the glass walls facing north-northeast, for maximum sunlight which is controlled on hot days by rolling blinds. Other elements of the typical dormitory floor (below) are: 2, lobby; 3, baths; 4, service; 5, vertical circulation; and 6, study.





ing a crescent around a landscaped court in which there will be a small administration building and infirmary as well as a student club building containing lounges, library, meeting and recreation rooms, a restaurant to seat 700, bar, and laundry and storage rooms. A kitchen in a separate building will serve both the restaurant and the infirmary.

An important point in the planning stage was the decision to provide only single rooms for the students. Levi cites three reasons for the solution:

"For the development of the personality of the student, it is important that he can have isolation for concentration at times. In a group building, such as a dormitory, this is possible only in a private room.

"The student in a private room is fully responsible for the property therein.

"It was proved that the private room as developed is more economical than a three-bed scheme. The two-bed room was not considered."

Appreciable economies were effected by centralizing bath and toilet facilities (each student room is equipped with wash basin, to alleviate washroom congestion), and by centralizing vertical circulation. Except for a small area on the ground floor, enclosed for janitor's room, baggage storeroom, and a bicycle garage, the buildings are open for free circulation and lightness of appearance.

Vehicular circulation is around the residence group and the garden court affords a pleasant meeting place, linking the dormitories and related structures.

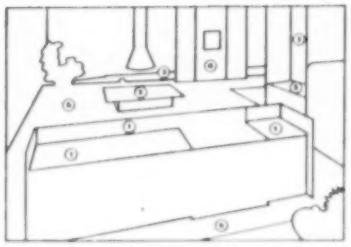
The club building provides for group activities.

Design for a family-living kitchen by George Nemeny, A.I.A.

"CLAY TILE...A WARM, COLORFUL MATERIAL... FITS INTO MODERN FAMILY LIVING!"

George Nemeny

key to clay tile service areas:



1. Clay tile countertop and splash back. 2. Informal clay tile dining fireplace. 3. Clay tile patio area. 4. Decorative clay tile wall panel. 5. Clay tile cupboard-workspace. 6. Practical clay tile floors.

Architect Nemeny's "family-living" kitchen shows you how colorful clay tile can spark new decorative and functional ideas for modern living. In new construction or in remodelling, clay tile will give your clients lifetime cleaning convenience and beauty, freedom from waxing and refinishing, and surfaces that resist heat, moisture, scratching and fading practically forever.

In your next project—residential, industrial or institutional—be sure to obtain comparative cost estimates. In some installations, clay tile actually costs less than substitute materials. When designing or building, consider clay tile's qualities and brilliant color range.

Tile Council of America, Room 3401, 10 East 40th Street, New York 16, N. Y. or Room 433, 727 West Seventh Street, Los Angeles, Calif.

The Modern Style is

GENUINE CLAY **tile**

PARTICIPATING COMPANIES: American Encaustic Tiling Co. • Architectural Tiling Co., Inc. • Atlantic Tile Mfg. Co. • B. Mifflin Hood Co. • Cambridge Tile Mfg. Co. • Carlyle Tile Co. • General Tile Corp. • Gladding, McBean & Co. • Mosaic Tile Company • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Pacific Tile and Porcelain Co. • Pomona Tile Mfg. Co. • Robertson Mfg. Co. • Royal Tile Manufacturing Co. • Summitville Tiles, Inc. • United States Quarry Tile Co. • Winburn Tile Mfg. Co.

ARCHITECTS: SMITH & VOORHEES, DES MOINES, IOWA

Contractor: Hurley Construction Co., St. Paul, Minn.

MODERN SCHOOL DESIGN SAVES $500 PER ROOM

Smith and Voorhees specified glued laminated wood structural members for the Webster Grade School at Pella, Iowa and the West Side Grade School at Eagle Grove, Iowa. Cost comparison showed a savings of $500 per schoolroom over other types of construction materials.

Contractors find they can give lower bids when Rilco glued laminated wood is specified. Gene Hurley, contractor of both jobs says, "Rilco really cut erection costs. The beams arrived on the job ready for erection. No specialized crews were necessary; the carpenters did all the erection easily with the connectors furnished by Rilco. There was no furring, we just nailed the Rilco decking to the top of the beams and purlins."

The natural beauty of Rilco glued laminated wood gives an attractive interior; the ease of erection and elimination of interior finishing cuts construction costs—yet Rilco structural members offer the architect freedom of design with simple yet effective construction in a fire-resistant material.

For the modern school design that calls for economical construction and beauty, the architect who specifies Rilco achieves an attractive and structurally sound building at lowest cost. Rilco's service engineers will be pleased to consult with you about your requirements. Write for information or see our catalog (2B/Ri) in Sweets.

RILCO

works wonders with wood

RILCO LAMINATED PRODUCTS, INC.

2517 FIRST NATIONAL BANK BLDG., ST. PAUL 1, MINN.

Where the *other* services also count – it's always BAYLEY WINDOWS

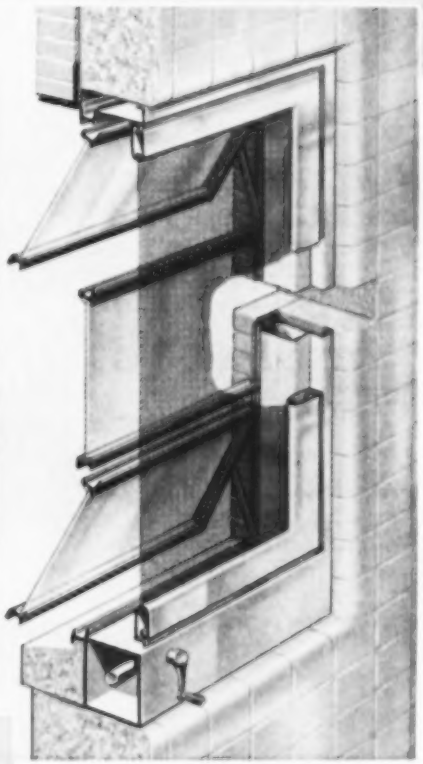
Larue Carter Memorial Mental Hospital, Indianapolis, Indiana
Robert Frost Daggett & Associates, Archt., Indianapolis, Indiana
Service Construction Co., Bldr., Indianapolis, Indiana

Bayley Psychiatric Windows meet today's demands of hospital authorities for security, plus ample air, daylight and vision

Rendering all phases of specialized window assistance—from the inception of a building project to its completion—is Bayley's forte. Time-proven quality of product is only one ingredient. Even more important is design—achieving a window that meets the buildings specific needs. This is exemplified by the Bayley Psychiatric Window which was developed in collaboration with mental hospital and institution authorities. It complies with their demands for such wigdow features as:

Safeguards against escape • Better daylighting • Controlled ventilation • Large areas of clear glass vision • Minimizes self injury • Working parts concealed • Sanitary, easy to clean • Glass washed from inside • Reduces maintenance and interference with hospital routine • Reduces detention appearance Can be fitted with inside screens and drapes.

Your requirements may call for an entirely different type of window. But if so, you'll find Bayley—with their years of specialization in steel and aluminum windows for all classes of buildings—qualified and cooperative in helping you best solve your window problem. Write or phone.



74 Years of RELIABILITY

See Bayley in Sweet's. Complete catalogs on Aluminum Windows, 16a/Bay; Steel Windows, 16b/Ba; Hospital Detention Windows, 16b/Bay.

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THE WILLIAM BAYLEY COMPANY
Springfield, Ohio

District Sales Offices:

Springfield Chicago 2 New York 17 Washington 16

p/a views

(Continued from page 12)

columnists praised

Dear Editor: For some time I have been wanting to write you to make known my pleasure derived from the very excellent OUT OF SCHOOL articles by Carl Feiss.

I simply want to say that these articles together with those of Bernard Thomson's IT'S THE LAW constitute the most top notch, most worthwhile part of your fine magazine. In addition to being informative and amusing, Carl is always provocative. In other words, his stuff is great. Meanwhile, Thomson's stuff is most practical and thoroughly useful. I only wish the attorneys down in the grass roots, where we are, were as well acquainted with and had as full understanding of our problems in practicing architecture.

CHARLES A. PEARSON, JR.
Radford, Va.

Unlimited flexibility! A new modular group . . .

Realwood Formica tops in a wide selection of sizes. Choice of drawer and cabinet arrangements to suit the requirements of individual personnel. Selected walnut or birch. This conference group has a concealed section that slides into sight to furnish three extra drawers. Chairs in correlated design. Write, on your letterhead, for photos and prices. Designer—G. Luss

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Factory: 407-13 East 91st Street, New York 28 • Phone SAcramento 2-2873

job well done

Dear Editor: Your special issue on TV stations (September 1953 P/A) is a job well done. Congratulations. It should reach the desk of every broadcasting studio executive.

Your P.S. was potent, particularly the chapter on present TV programs. We have discontinued calling on our friends, one by one, because invariably we are tortured watching TV programs, when the time could be better spent digesting any issue of PROGRESSIVE ARCHITECTURE.

WALTER THOMAS WILLIAMS
Rochester, N. H.

liked presentation

Dear Editor: Please let me congratulate you on the excellent presentation on TV studios in September 1953 P/A.

H. GRIFFITH EDWARDS
Atlanta 3, Ga.

dispassionate evaluation

Dear Editor: Your P.S. in September 1953 P/A was a source of genuine delight and satisfaction to me.

I was delighted to know that someone in the profession had clear vision and judgment to evaluate dispassionately both the trends in architecture and the personalities in it. I was glad that someone had the courage of his convictions to speak openly regarding Frank Lloyd Wright's notoriety, refusing to worship at his feet. Your observations are timely and true, giving us the leadership we need so desperately at this time.

RALPH J. BISHOP
Spokane 11, Wash.

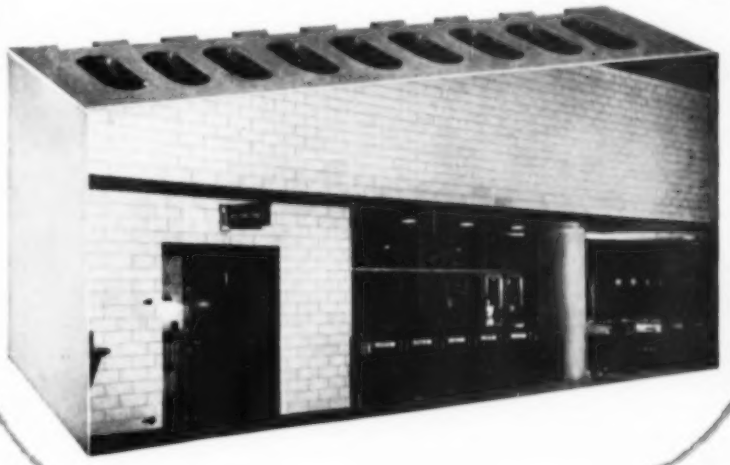
spoken for many

Dear Editor: In your article (P.S. September 1953 P/A) taking Frank Lloyd Wright to task, you have again spoken for many who while respecting greatly his contributions to contemporary architecture, deplore his most recent outbursts.

(Continued on page 22)

Staten Island, N. Y., Ferry Terminal
Madigan-Hyland, Architects and Engineers
Cauldwell-Wingate Co., General Contractors

time-
proved...



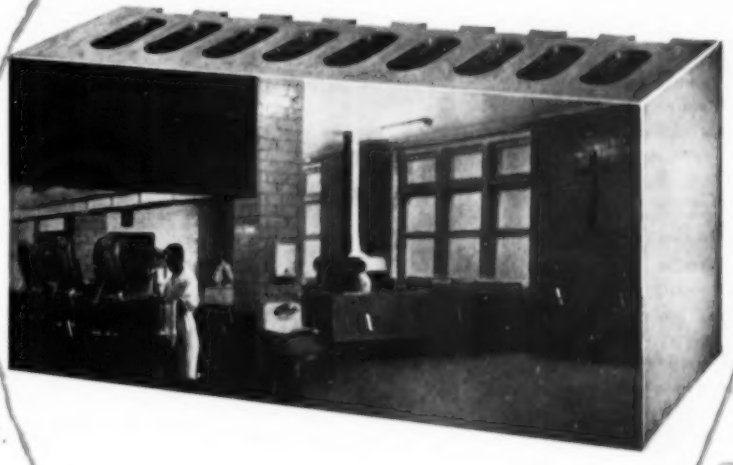
It takes years of use to test a building material thoroughly under all sorts of conditions.

That's one reason why so many architects favor Stark Glazed Facing Tile for heavy-duty interiors.

Stark's quality has been proved in thousands of fine buildings erected over the past 40 years – schools, hospitals, industrial plants, laboratories, commercial and public buildings.

STARK GLAZED FACING TILE

Kitchen, St. Jean De Dieu Hospital
Montreal, Quebec, Canada
Architect: Brais and Sayard
Contractor: Concrete Construction Co.



FOR MINIMUM MAINTENANCE
Stark Glazed Facing Tile resists rough usage, completely eliminates refinishing costs—for the building's lifetime.

FOR SANITATION
Stark's ceramic glazed finish washes sparkling clean with plain soap and water, will never stain or harbor odors.

FOR CONSTRUCTION SAVINGS
Made in large modular units, it builds a wall and finish in a single time-saving step.

FOR "COLOR-ENGINEERING"
Stark's colors are scientifically developed to help lighting and vision under a wide variety of conditions. You can select the color to fit the task.

FREE BROCHURE on Modular Masonry will help you use Stark Glazed Facing Tile to best advantage. Address your request to Dept. PA-11.

STARK *Ceramics, Inc., Canton 1, Ohio*

14305 Livernois Avenue, Detroit 4, Michigan • 15 East 26th Street, New York 10, N. Y.

FTI
Member of

p/a views

(Continued from page 20)

History records in other times other men who were acclaimed as geniuses in their fields but who have been less respected for their evaluations of their foremost contemporaries, or for their thinking in other fields.

ABRAHAM W. GELLER
New York 10, N. Y.

keeping to forefront

Dear Editor: Your P.S. in August 1953 P/A was certainly timely.

It is interesting to note that the Chicago AIA Chapter has been disturbed by similar problems. But one of the gratifying things here is the fact that the Chapter, having been stirred, is making greater efforts to overcome the friction.

My main point in writing is to indicate that such comments as you have made will keep these matters in the forefront.

WALTER H. SOBEL
Chicago, Ill.

additional credit

Dear Editor: I was pleased and gratified to see that you had the water fountain of the Conservatory Aviary for publication in July 1953 P/A.

This detail was made by Simonds & Simonds, our Landscape Architects for this project, and I am sorry that their name was not mentioned.

LAMONT H. BUTTON
Pittsburgh 12, Pa.

accommodating handicapped

Dear Editor: In an article entitled "planning for the handicapped" (April 1953 P/A), Irwin Luckman describes the planning of a house for a disabled man suffering from paraplegia. The submitted solution is based on the use of parallel bars on suitable levels and is entirely arranged to fit the individual case.

At first sight, the engagement of bars seems to be a brilliant idea. It soon becomes clear, however, that bars are useful only under very special circumstances. When for example a "bar" client becomes older, which usually means less strength in the chest and arms, it must in length of time be rather difficult for him to use the bars. It seems thus evident that bars are only helpful within a limited period of the client's life. Afterwards he is due to use a wheel-chair for his getting about. Parallel bars can thus be considered only a technical aid, sometimes very helpful, but of restricted worth. When regular exercise is required, technical aids for that purpose can be arranged in the bathroom or in a specially equipped room.

Concerning housing for cripples, the one-family house is to be preferred because it favors individual solutions. The cripples, however, as other people, mostly have to rent a flat in an apartment-house. As the prospective tenant, as a rule, is unknown to the designer until very shortly before the flat is definitely constructed, it is necessary to design some few types of flats so arranged that they suit a large number of cripples.

KARL MONTAN
Svenska Vanforevardens Centralkommitte
Stockholm, Sweden

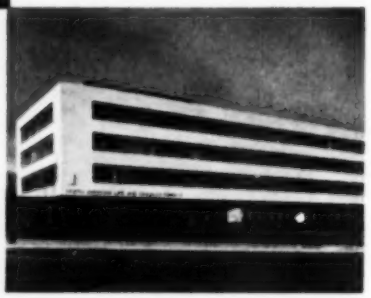
Keep Walls Dry

WITH CABOT'S CLEAR CEMENT SILICONE WATERPROOFING

Top: Architects: Lang and Raugland, Minneapolis, Minn.

Center: Architect: D. A. Bohlen, Indianapolis, Ind.

Bottom: Architects: Naramore, Bain, Brady, and Johnson, Seattle, Wash.



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(in Canada: Paul Callet & Co., Ltd., Montreal)

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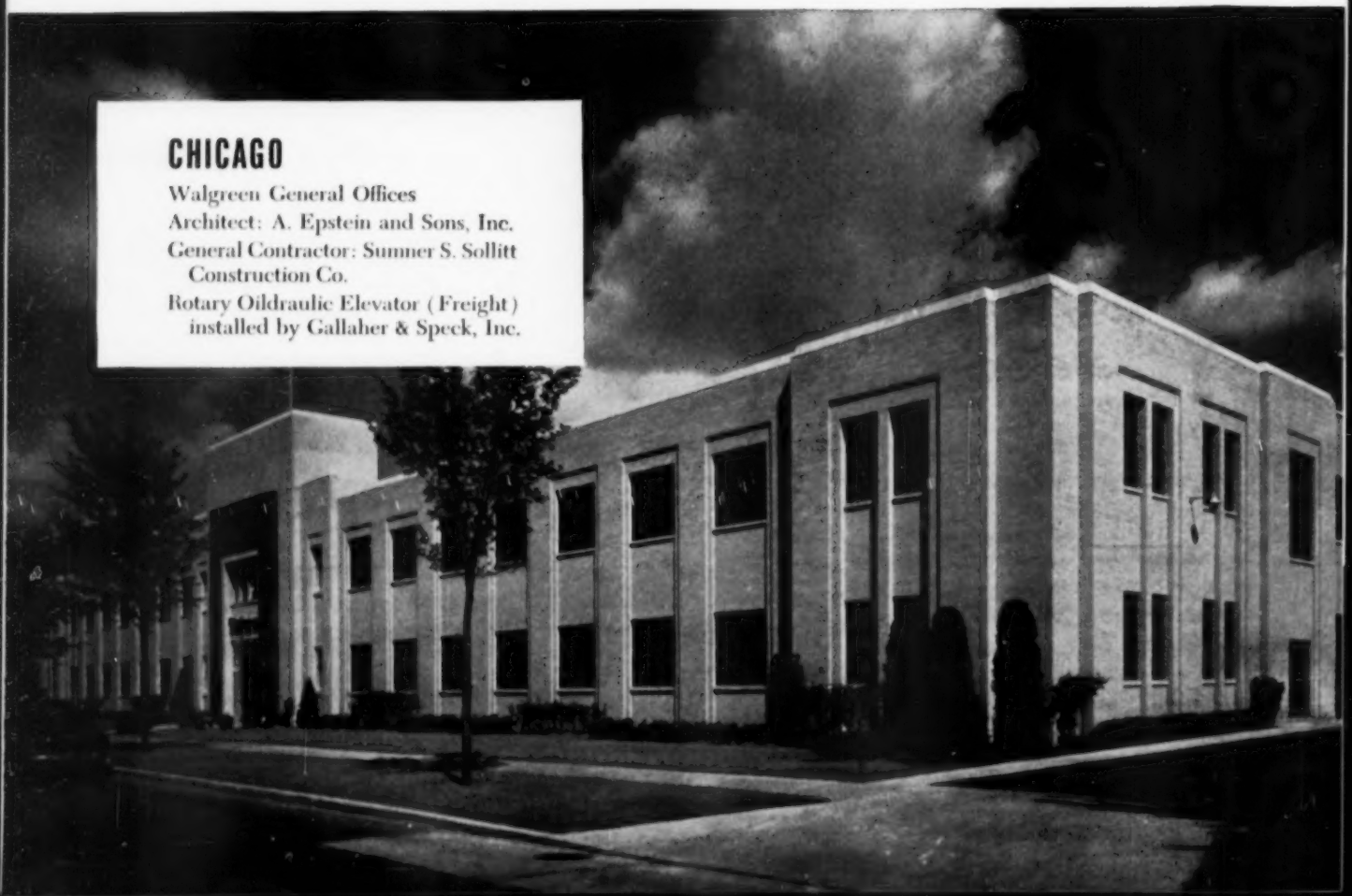

CHICAGO

Walgreen General Offices
Architect: A. Epstein and Sons, Inc.
General Contractor: Sumner S. Sollitt Construction Co.
Rotary Oildraulic Elevator (Freight) installed by Gallaher & Speck, Inc.

No penthouse or heavy sidewalls

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World's oldest and largest maker of oil hydraulic elevators
SEE OUR CATALOG IN SWEET'S FILES

LOS ANGELES *(above)*

601 South Ardmore Building
Architect: Carrington H. Lewis
General Contractor: Robson-Berns
Rotary Oildraulic Elevator (Passenger) installed by Elevator Maintenance Company

EAST ST. LOUIS *(above)*

Alcoa Research Laboratory
Architect: Company architect
General Contractors: Fruin-Colnon Contracting Co.
Rotary Oildraulic Elevator (Passenger-Freight) installed by General Elevator Engineering Co.

MEMPHIS *(left)*

Julius Lewis Department Store
Architect: Hanker & Heyer
General Contractors: McNeese Construction Co.
Rotary Oildraulic Elevators (Passenger and Freight) installed by The Southern Company

TUESDAY

WEDNESDAY

THURSDAY

MONDAY

26-story Skyscraper clad in Alcoa Aluminum in 6½ days!

Building—Tishman Building, 99 Park Avenue, N. Y., N. Y.

Owner—Tishman Realty & Construction Company, Inc.

Architect—Emery Roth & Sons

General Contractor—Tishman Realty Corporation

Subcontractor on Aluminum—General Bronze Corporation

The entire job of erecting the outside walls of this 26-story office building was done in 6½ working days. The conventional masonry construction originally planned would have taken eight weeks or longer. Alcoa helped develop the materials and the methods which made this record possible.

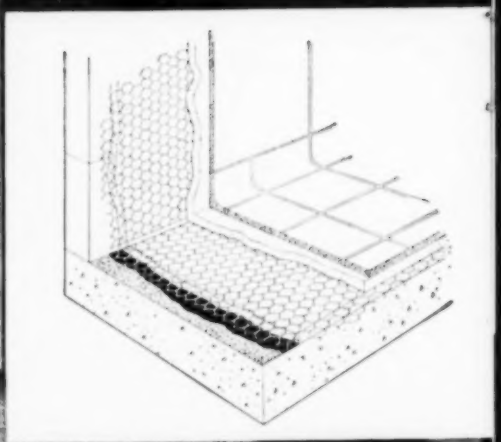
The first plans of the $14,000,000 structure being erected by Tishman Realty & Construction Company, Inc., were redrawn as a result of careful study of the Alcoa Building. The pioneer use of aluminum curtain-wall construction in the Pittsburgh headquarters of the Aluminum Company of America forecast the building economies dramatically proved by this walls-in-a-week record.

The 1800 exterior panels were prefabricated, each complete with two windows, by General Bronze Corp. within a period of three months—two stories high and over 4½ feet wide, they were trucked from the assembly line to the building and stored on the floor they were to enclose. Three crews installed the panels from inside the building without the use of exterior scaffolding.

The economies of modular, curtain-wall construction with lightweight, low-maintenance aluminum panels are available to you for new construction or modernization of existing buildings. A phone call to your local Alcoa sales office, listed in your classified directory under "Aluminum", can acquaint you with full details. Make the call today. Or write: Aluminum Company of America, 1890-L Alcoa Building, Pittsburgh 19, Pennsylvania.

Alcoa Aluminum

ALUMINUM COMPANY OF AMERICA



La Salle Hotel Lobby Rapp & Rapp, Architects

specify a FLOATING SLAB with

Terrazzo floors will retain their beauty years longer if you specify "floating slab" construction reinforced with Keymesh. With this construction, the terrazzo base and finish become an independent slab . . . are independent of the structural movement of the framework of the building.

KEYMESH reinforcing for

GALVANIZED REINFORCING

It is easy to see the advantages of Keymesh reinforcing. It's galvanized. You're sure of a good bond because it's free of rust. Made of woven steel wire mesh, it provides multidirectional reinforcement. The exclusive reverse twist weave adds still more strength. Keymesh also has more cross wires per square foot than other types of reinforcement. That means greater reinforcing strength and bonding area, too!

With all its advantages, the cost of Keymesh is low. Usually, you get the "extra" value in Keymesh at lower cost than for other types of light duty reinforcement.

lasting TERRAZZO beauty

The independent reinforced terrazzo structural slab is your most positive assurance against cracking due to structural movement. That's why you get lasting beauty.

Floating slab construction, with Keymesh reinforcement, assures a strong crack-resistant base for tile, oxychloride, asphalt emulsion and mastic floors, as well as for terrazzo.

HERE'S HOW YOU BUILD A FLOATING SLAB WITH KEYMESH REINFORCEMENT

Over the structural concrete base, spread a layer of sand, which provides the floating effect. Add 15 lb. felt paper topped with 1:4 concrete mix. Place 1½ in. x 17 ga. Keymesh over this entire section, lapped two mesh widths at sides and ends. Complete slab with 1 inch 1:4 mortar, dividing strips and terrazzo topping. If cove or wainscot is included, add Keymesh (separated from the floor) to this area for maximum crack protection. If radiant heat is installed, place Keymesh over pipes before pouring mix. Keymesh provides uniform heat distribution, guards against cracks.

Keymesh is easy to handle. It rolls out flat, stays flat, and lays without bulges. 150′ rolls, 3′ and 4′ wide, in wire gauges to fit the job. Write for details.

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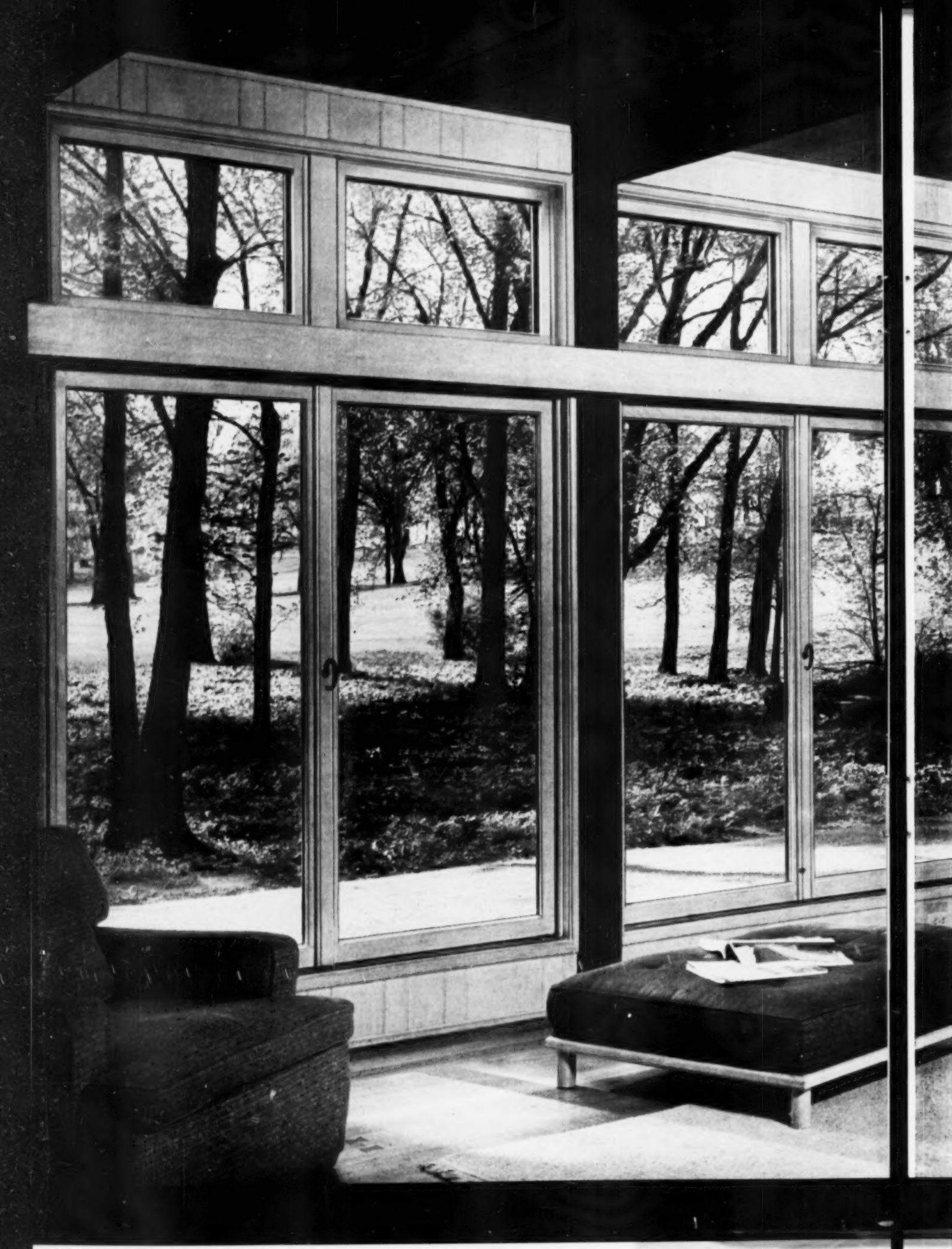

Humphrey & Hardenbergh, Inc., architects

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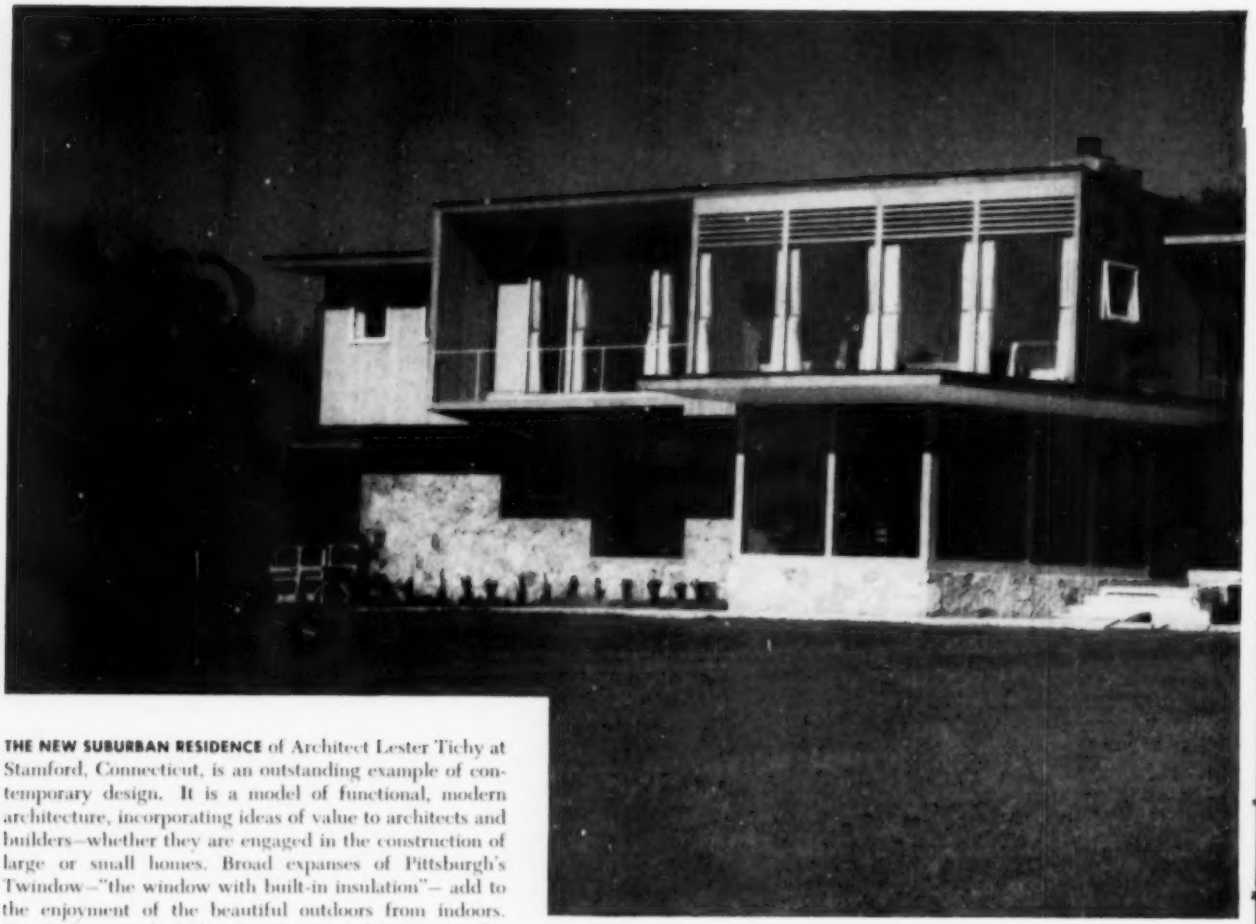
The Tichy Estate

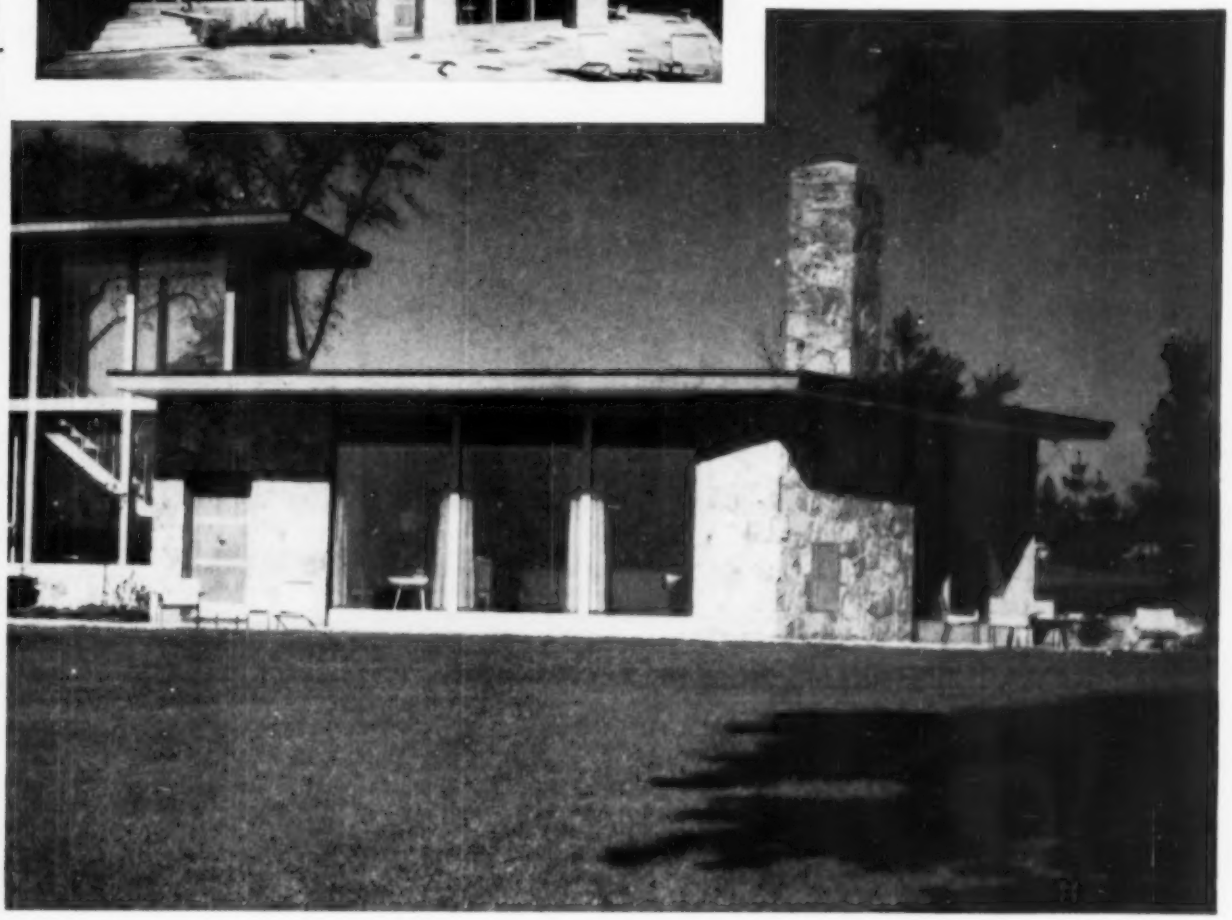
underscores the dominant role of glass in contemporary architecture



THE NEW SUBURBAN RESIDENCE of Architect Lester Tichy at Stamford, Connecticut, is an outstanding example of contemporary design. It is a model of functional, modern architecture, incorporating ideas of value to architects and builders—whether they are engaged in the construction of large or small homes. Broad expanses of Pittsburgh's Twindow—"the window with built-in insulation"— add to the enjoyment of the beautiful outdoors from indoors. Mr. Tichy stated: "Glass has been used in spectacular fashion, not only for its functional value, but for startling and beautiful texture contrast with the other construction materials."

IN THE DINING ROOM, too, large areas of Twindow units increase the spaciousness of the room, frame the attractive patio and wooded countryside for year-around pleasure. These Twindow double-glazed units offer all the advantages of broad expanses of glass, without affecting heating efficiency. They minimize downdrafts near windows and reduce the tendency for condensation to form.

A STRIKING FEATURE of this house is the hall and suspended stairway, connecting the living room with the rest of the building. Both sides of the stairhall are completely enclosed by Twindow units. The spacious living room, shown at right, also utilizes floor-to-ceiling Twindow units, affording a pleasant view winter and summer.



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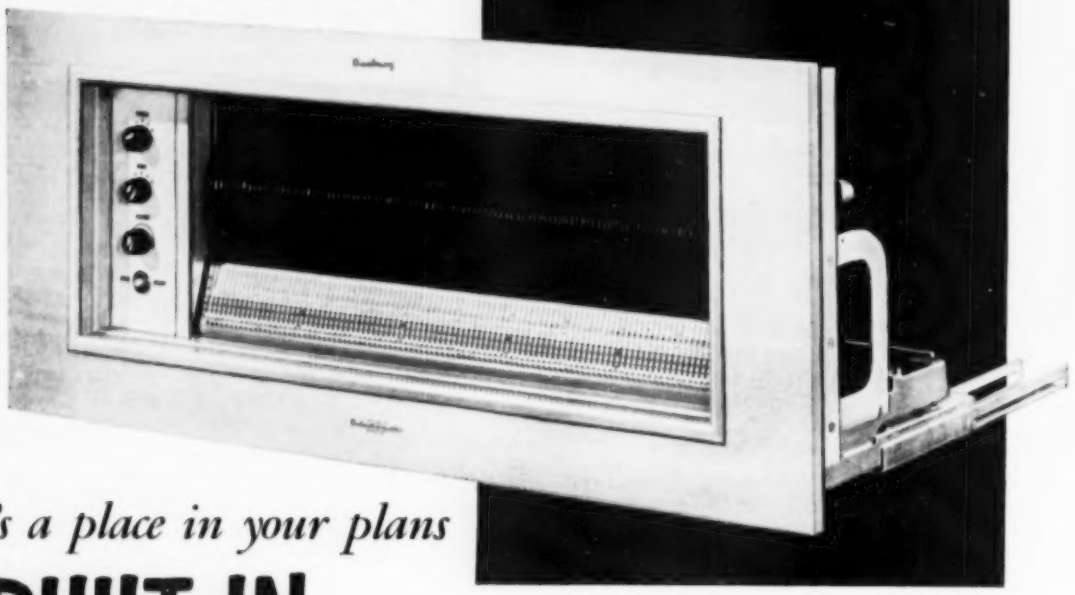

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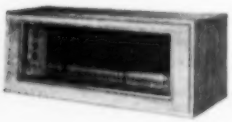
The Console. High fidelity pre-amplifier, 20-watt high fidelity amplifier (20 to 30,000 cps range), high fidelity dual coaxial speaker. Spring tension magnetic pickup with diamond styluses. Beautiful light Korina or rich mahogany wood cabinet. Size: 38 1/4" x 39 1/2" x 20 1/4".

The Library Unit. For playing through TV, radio or other amplification system. High fidelity pre-amplifier. Spring tension magnetic pickup with diamond styluses. Modern limed oak cabinet. Size: 16 1/2" x 38 1/2" x 17 1/2".



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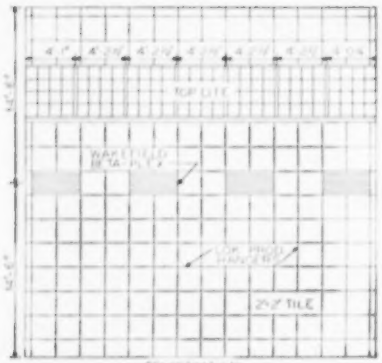
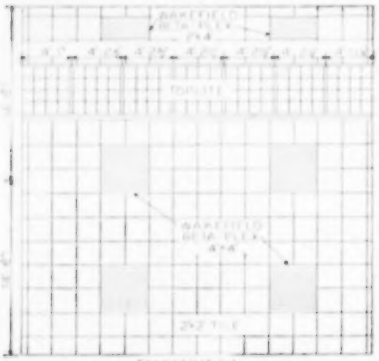
How to supplement glass block skylighting by using Wakefield Beta-Plex units



FENESTRATION

For daytime only: *four 2′ x 4′ Beta-Plex recessed units are mounted on the ceiling almost in the center of the room. The arrangement of side wall and glass block skylighting shown here will put the low point of daylight directly under the Beta-Plex units.*



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For Day and Night Use: *a minimum of 30 ft-C of electric light to meet the requirements of American Standard Practice will be provided by this arrangement of two 2′ x 4′ and four 4′ x 4′ Beta-Plex units. Separate circuits and switches will permit full (night) or partial (day) use.*

Wakefield Beta-Plex is a complete unit ready for recess mounting in a suspended ceiling. Separate circuits and switches may be installed for different lighting levels. The ballasts and lamp-holders are contained in an individual metal housing that provides for hook-on suspension points for the Wakefield Rigid-Arch Diffuser.

The Rigid-Arch Diffuser is molded with a sweeping arch, slightly higher in the center than at the edges to give greatly improved rigidity. It has a non-specular, matt finish that minimizes possible reflected glare from outside the building. Beta-Plex is also available with louvers. The Touch-Latch makes the interior of the luminaire readily available; press up with the touch rod —the Touch-Latch releases and the Rigid-Arch Diffuser swings down and open. Press the diffuser up again—the Touch-Latch secures the panel in place. Available in 2′ x 2′, 2′ x 4′, 1′ x 4′ and 4′ x 4′ units.

For an illustrated, descriptive 8-page folder on Beta-Plex, write to The F. W. Wakefield Brass Company, Vermilion, Ohio. In Canada: Wakefield Lighting Limited, London, Ontario.

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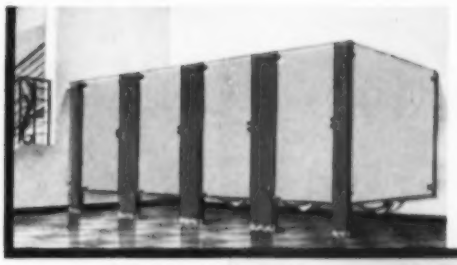
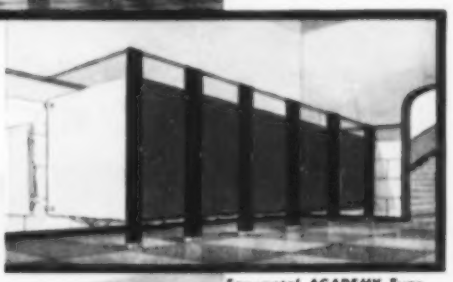
Integrated modular components for functional ceilings

Beta-Plex is one of a series of Wakefield Geometrics. Others are Omega-Plex, Theta-Plex and Sigma-Plex. Folders describing each are available.

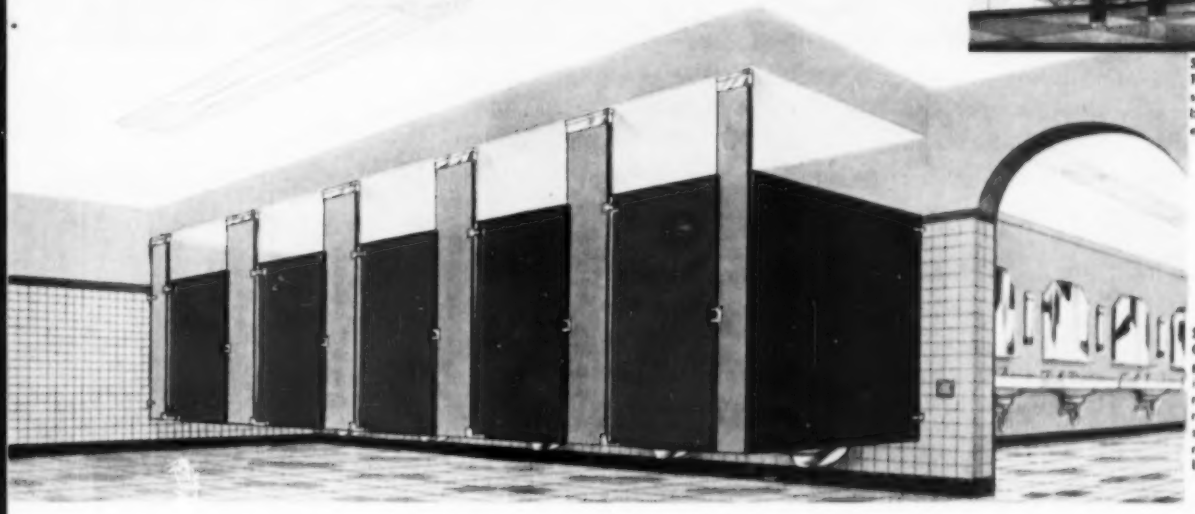
Untimely obsolescence of rest rooms usually occurs when and where it is invited...



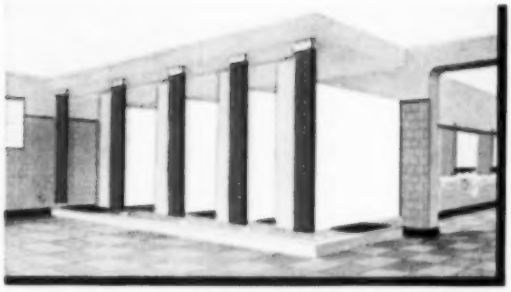
Sanymetal NORMANDIE Type Toilet Compartments endow a rest room environment with dignity and good taste.



Sanymetal ACADEMY Type Toilet Compartments are suitable for conservative but modern rest room environments.



Sanymetal CENTURY Type Ceiling Hung Toilet Compartments offer the utmost in sanitation and provide modern, distinctive rest room environments for schools, institutions, terminals and other public buildings.



Sanymetal CENTURY Type (Ceiling Hung) Shower Stalls of Sanymetal "Porcena" (Vitreous Porcelain on Steel) Partitions and Pilasters, as arranged for a typical club installation. Also available in Sanymetal "Tenac" (synthetic enamel baked on over Galvanized, Bonderized* Steel).

The bare functional type of rest room is no longer adequate. It is obsolete before it is completed according to today's standards. To insure against untimely obsolescence consider the installation of wall-type plumbing fixtures and ceiling-hung toilet compartments. Such an installation provides a fixture free floor—a basic necessity for a high standard of sanitation and reducing maintenance costs to an all-time low.

The rest room environment that stays new is the rest room in which the most suitable type of toilet compartment available has been installed. Sanymetal offers several different types of toilet compartments for creating the most suitable rest room environment for each type of building. Sanymetal also offers and recommends Two Full Purpose Metal Base Materials which combine colorful attractiveness with long years of service life and effect important day-after-day savings in cleaning and maintenance costs. These Two Full Purpose Metal Base Materials—Sanymetal "Tenac" (Galvanized, Bonderized* Steel), a highly corrosion-resistant material; and Sanymetal "Porcena" (Vitreous Porcelain on Steel), the ageless and fadeless, rustproof material—represent years of engineering research and skillful adaptation by Sanymetal engineers of corrosion-resistant steels to the fabrication of new and different types of toilet compartments. There is no other material that equals Sanymetal "Porcena" (Vitreous Porcelain on Steel). Sanymetal Toilet Compartments are also available in cold rolled steel.

Sanymetal Toilet Compartments and Shower Stalls embody the results of over 39 years of specialized skill and experience in making over 500,000 toilet compartment and shower stall installations. Ask the Sanymetal representative in your vicinity to demonstrate the worthiness of Sanymetal Toilet Compartments as protection against untimely obsolescence.

This is Sanymetal
"PORCENA"
(Vitreous Porcelain on Steel)
A metal base material that is impervious to moisture, odors, cleaning and uric acids, oils and grease. It is rust proof. Available in 21 glistening colors.

This is Sanymetal
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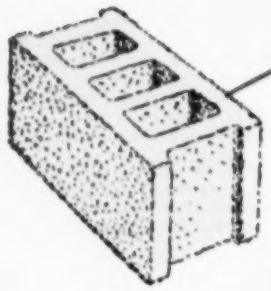
CONCRETE

With 1954 predictions pointing to further increases in educational, religious, and recreational construction volume, architects will do well to re-examine for these projects the traditional advantages of concrete masonry: low installed-in-the-wall cost; less expensive finishing costs; structural strength; thermal insulative values, and built-in acoustic qualities.

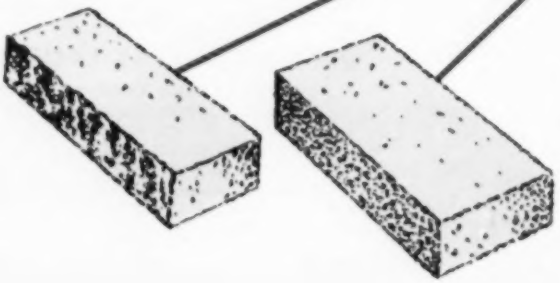
In addition, imaginative architects are recognizing the greater design possibilities of concrete masonry units: unique and attractive effects with standard 8″ x 16″ units; also from the new sizes and styles, colors and textures now available in many areas.* Illustrated here are a few of the many wall patterns and texture variations shown in the new C/M idea booklet offered below.

*NOTE: Half-height units, split-block, slump block, integrally colored units, and other new textures, sizes, and styles are becoming increasingly available in many areas. Consult your local NCMA member for details, or write to address listed below.

NATIONAL MASONRY CONCRETE ASSOCIATION
38 South Dearborn — Chicago 3, Illinois



Modern office of Texas Industries in Dallas shows four concrete masonry styles in a variety of design treatments.
Architect: George L. Dahl.
Contractor: Dolph Construction Co.

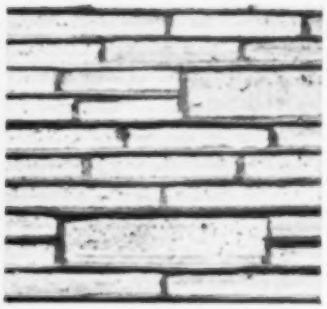


NEW! 16-page booklet of ideas on exposed concrete masonry wall patterns and finishes . . . yours for the asking, of course.

patterns in MASONRY

Split-block, in coursed ashlar pattern.

Half-height (4" x 16") units, cement-washed to give adobe effect.



Slump block (sizes 4" x 3 5/8" x 24" and 4" x 1 5/8" x 24") used as veneer. Often integrally colored.

Shadow block give strong horizontal line. Another method: tooling horizontal joints, wiping out verticals with standard units.

Stacked bond pattern in 8" x 16" honed units used for lower walls of school gymnasium. Coarse textured 4" x 16" units on upper walls preserve acoustic values.

Alternate courses of 8" x 16" and 4" x 16" units for school hallways.

National Concrete Masonry Association
38 South Dearborn — Chicago 3, Illinois
Dept. PA-11

Please send the following:

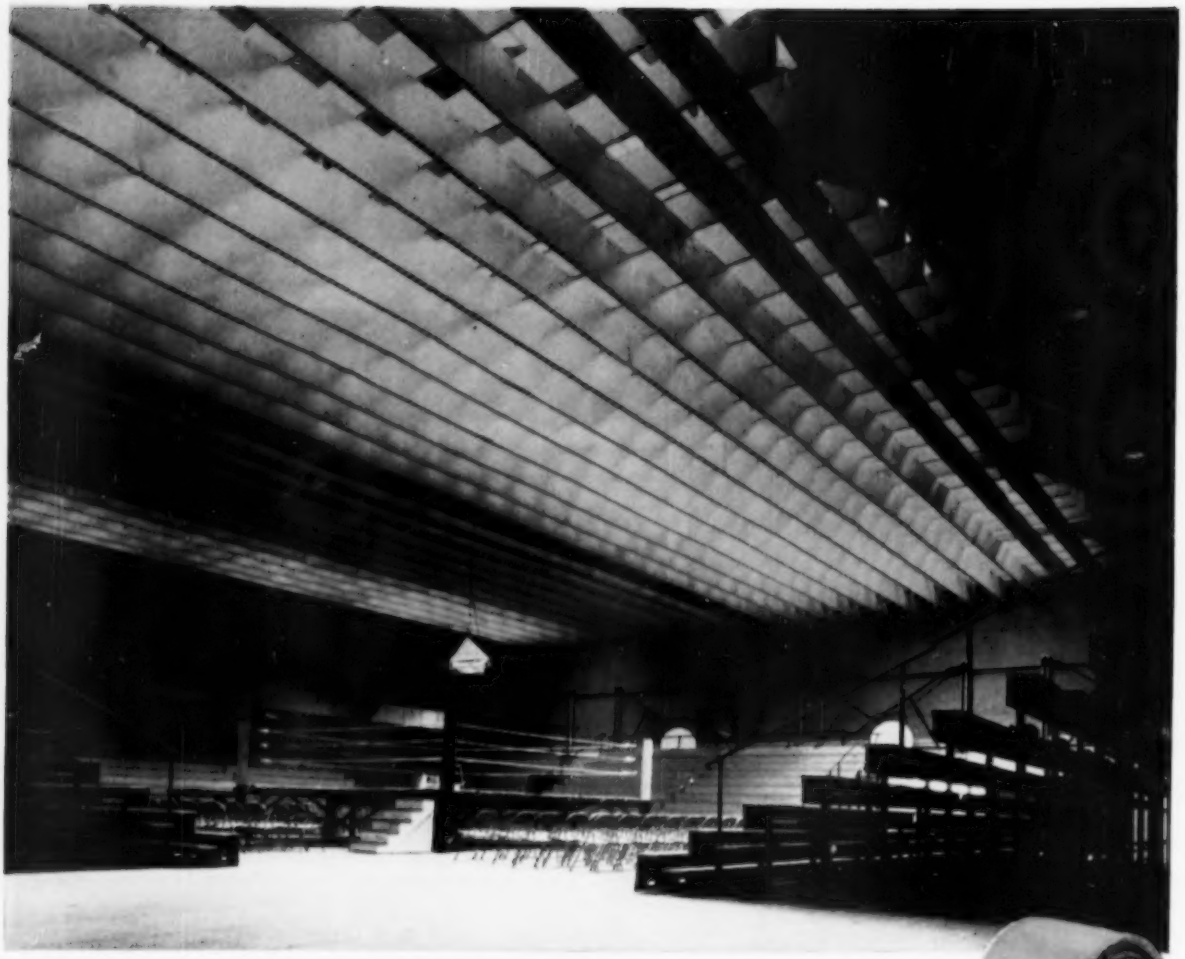
____ **16-page booklet "Ideas for Wall Patterns and Decorative Details with Concrete Masonry"**

Name _____

Firm Name _____

Address _____

City _____ **State** _____



Foster High School, Seattle, Washington, awarded First Prize by the American Association of School Administrators. Architect: Ralph H. Burkhard

How sound was baffled by ULTRALITE in this architectural award-winning school

One of the most unusual of the many novel design features in this prize-winning school was the acoustical application of Ultralite glass fiber insulation baffles in the gymnasium. These baffles consist of two levels of criss-crossing panels of Ultralite suspended on wires by metal clips. This unusual application has proved most effective in controlling sound; reverberation and echo are virtually non-existent.

Ultralite thermal insulation was also used as a basic building material in the Foster High School. To provide the required thermal protection, Ultralite with vapor barrier facings was installed on the underside of the roof in the gymnasium, classrooms and corridors.

Light in weight, flexible, resilient, with a unique "long-staple" strength, Ultralite glass fiber insulation lends itself to many thermal and acoustical applications not possible with other insulations. For details, see section 6a of Sweet's Architectural File, call your local Ultralite distributor, or write for latest literature.

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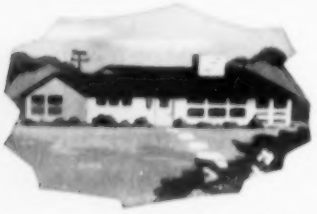
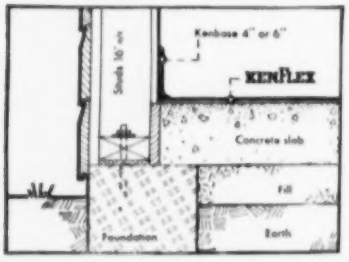
Specify for commercial use: KenFlex has decorative beauty plus the important economy advantages of rugged wear, extreme grease resistance and easier maintenance.



Specify for residential use: The co-ordinated beauty of the 14 colors plus the ease and economy of upkeep make KenFlex ideally suited to homes. Recommended installation shown below.



New as it is, KenFlex has been thoroughly proven in actual use! One example of this exhaustive research is the test installation that was placed in a major, heavy-trafficked New York office building. Here, over 13,000,000 people have walked on a KenFlex Floor in the past 13 years...yet it shows no signs of wear...is attractive as if it had been installed yesterday.

KenFlex is truly a superior floor...combining the best qualities of vinyl and asbestos. It's rugged for long, hard service...colorfully beautiful but never needs waxing except to make the glowing colors shine a bit more. And, KenFlex sets a new standard in grease resistance...it's impervious to cooking and petroleum oils, alkalis, alcohols, most acids and reagents. Still, it cleans without scrubbing and colors never wear off...they go clear through the tough tile.

Specifications and Technical Data

INSTALLATION

KenFlex can be installed over any smooth, firm interior surface..., wood, plywood, radiant heated concrete slabs, even over concrete in contact with the earth...on or below grade.

THICKNESSES

Laboratory and on-floor usage tests have *proven* that vinyl has great durability and wear resistance. Therefore, standard gauge (1/16") is recommended for normal residential and commercial uses. If exceptionally heavy traffic is expected, 1/8" gauge is recommended.

INSTALLED PRICES

Prices range from 40¢ per sq. ft. to 65¢ per sq. ft. depending on which of the thicknesses is chosen—for minimum area of 1000 square feet over cement underfloor.

SIZE

Standard tile size is 9" x 9". Also available are 9" x 9" decorative ThemeTile and 1" x 24" Feature Strip.

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modern flooring advantage institutions

In this drug store, the colorful KenFlex Floor is both *beautiful* and *functional*. And its grease-resistant properties save time, work and money...especially at the counter section. KenFlex colors shown are Marigold, Egret White and Ivy ThemeTile.

This kitchen-dining area owes much of its *charm* and *efficiency* to the modern KenFlex Floor that's so easy to clean with just a damp mop...needs waxing only to give the lustrous surface a brighter gleam. KenFlex colors shown are Desert Sand, Antique Coral, Bird ThemeTile and White Feature Strip.

A Prospect for Snow Melting lives here!

The owner of this attractive home is undoubtedly a successful business or professional man. As such he is necessarily intelligent.

He *knows* (1) that men unaccustomed to the routine of strenuous work should not risk the exertion of snow shoveling, (2) that temporary help is usually impossible to get when most needed, (3) that in cases of emergency the ability to get *out* of house or garage is quite as important as getting in, (4) that totaled over the years the cost of snow removal by hand labor reaches an unbelievably high amount.

So, he is a *good* prospect for steel pipe snow melting!

Yes, many home owners in the snowbelts have reasoned it through and have installed driveway and sidewalk snow melting systems not only as a wonderful convenience and safety measure but also as an economically justifiable investment in added property value.

Steel pipe helps to make it so. For steel pipe is economical, durable, weldable and formable for grids and coils, and has a proved background of performance in more than 60 years of conventional steam and hot water heating applications. In fact, for snow melting, radiant heating and other wet heat installations, steel is the most widely used pipe in the world!

A free 32 page color booklet, "Steel Pipe Snow Melting and Ice Removal Systems," has been prepared, answering the most commonly asked questions about snow melting. It includes technical data on design, piping layouts, temperature requirements, boiler capacities and other information for domestic, commercial and industrial uses. Ask for it.

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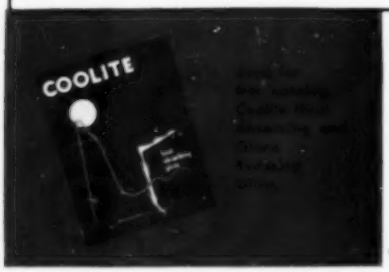

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R. R. 1, Carmel, Indiana

April 21, 1953

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This is to advise that we are now in the process of drawing Rusco Prime Windows into the plans for the next group of apartments on 14th and West Sts., known as Ransom St. Apartments, Inc.

After using Rusco Prime Windows with Metal Casings throughout the above project and also, on our Rolling Acres development in Carmel, we can say, truthfully, that your window unit is without an equal. Ease of installation, lack of field labor, elimination of many window "extras", such as painting and trimming have all added up to a lower "in the wall" cost for our company.

Inasmuch as we are required to maintain the apartment project, we, naturally, are delighted at the elimination of this expense in regards to your windows.

Incidentally, our response to your Fulvue unit on our Rolling Acres development has been most gratifying.

Very truly yours,

A. & W. Construction Co.

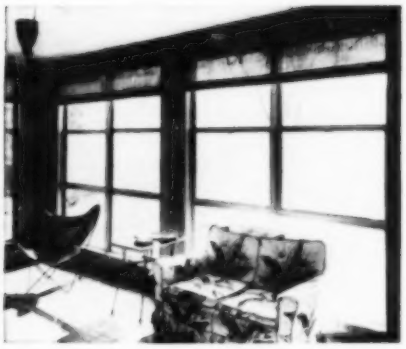
Charles E. Walter

Charles E. Walter, Pres.

RANSOM ST. APARTMENTS, INDIANAPOLIS, INDIANA is a 1,000-apartment project being built by the A & W Construction Company, and now partially completed. Photo above shows one of the completed units. At left is close-up of the Rusco Type P-22 Vertical Slide Prime Windows installed on unit. *ARCHITECT: Paul Cripe • BUILDER: A&W Construction Company*

IS WITHOUT AN EQUAL"

FULLY PRE-ASSEMBLED RUSCO PRIME WINDOWS PROVIDE THE ANSWER TO TOP QUALITY AT LOW COST



Rusco Prime Windows make possible very substantial savings in labor, installation time and maintenance. Because they are fully pre-assembled units—glazed, finish-painted, with surround and hardware attached—they reduce field work and installation time to a minimum.

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ARCHITECT: Joseph Caruti • BUILDER: Roediger Construction, Inc.

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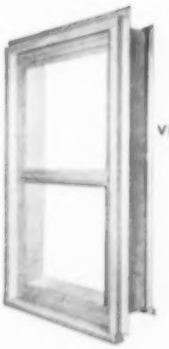
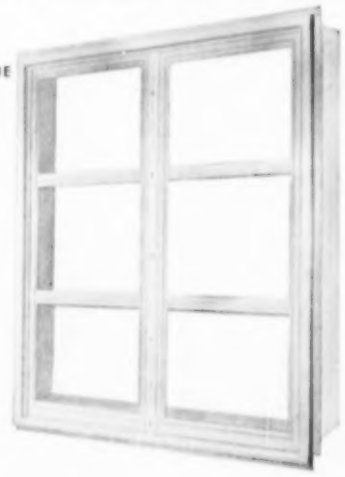


VERTICAL SLIDE

FULVUE



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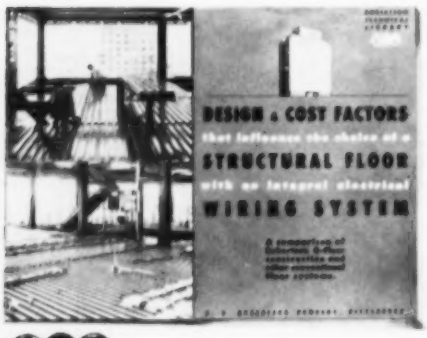

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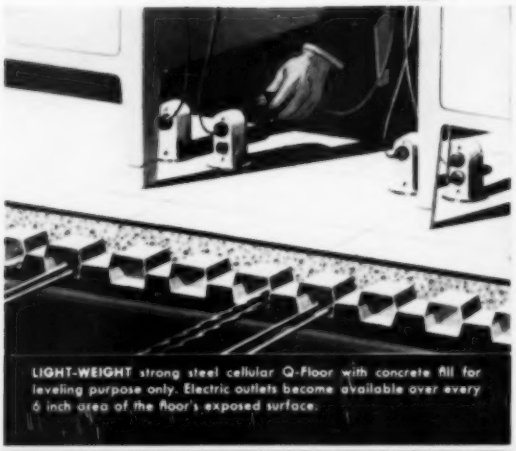

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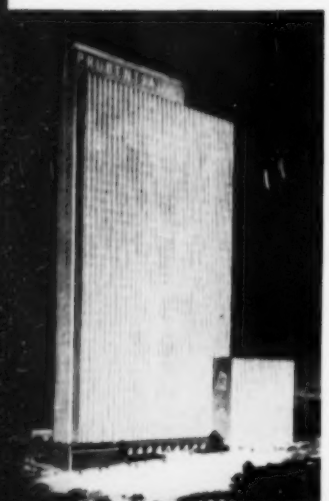

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L·O·F Polished Plate Glass adds to the beauty of this handsome room in the Boulder (Colo.) Municipal Building. Architect: James M. Hunter; Hobart D. Wagener, Associate, both of Boulder.

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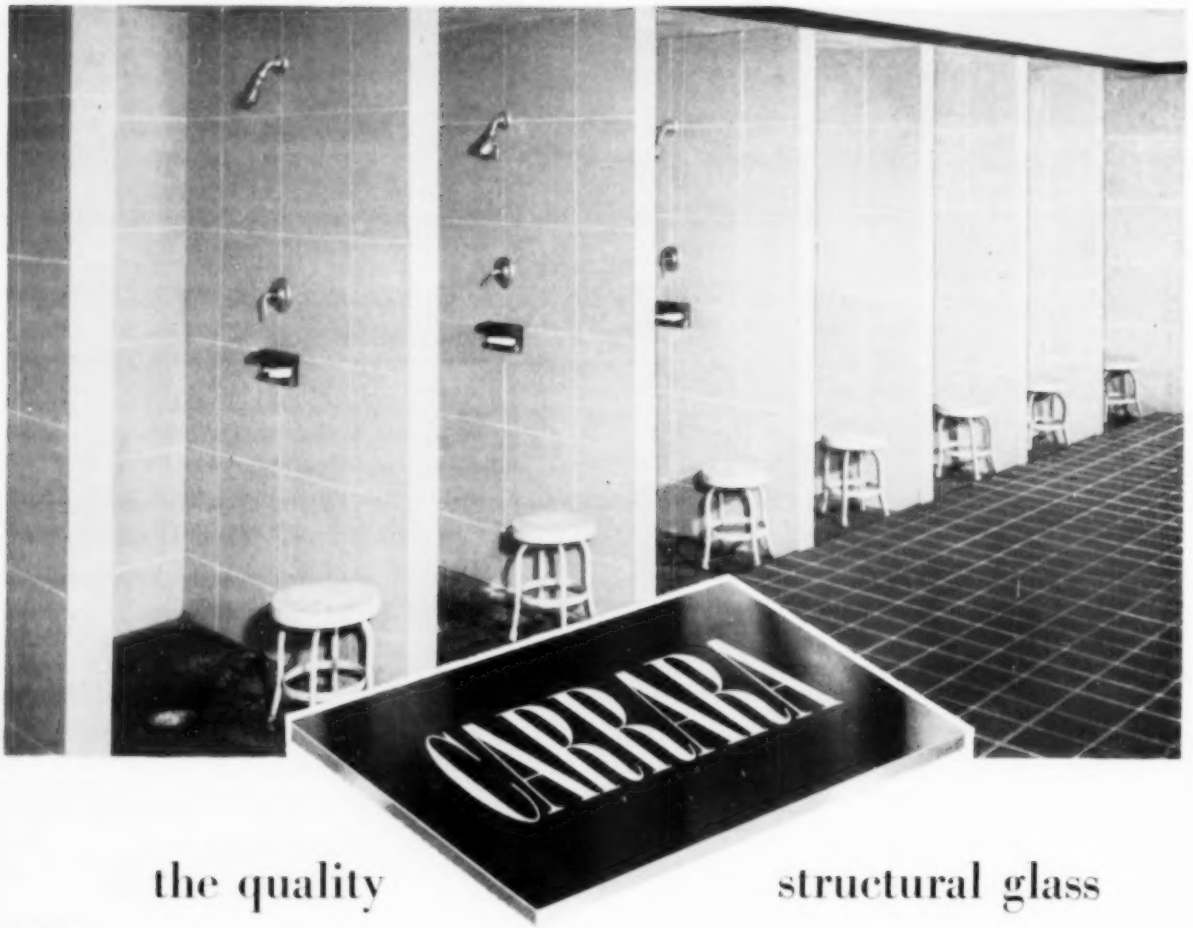
It lends itself perfectly to fine workmanship. Each block fits evenly with adjoining pieces, without gaps, overlapping, or special backing adjusters. The big pieces of Carrara are easy to handle. They go in place readily, are firmly held by an easy-to-apply, quick-setting mastic; need no exposed fasteners of any kind.

Pittsburgh Field Club, Fox Chapel, Pa
Architect: Francis A. Berner, Pittsburgh, Pa



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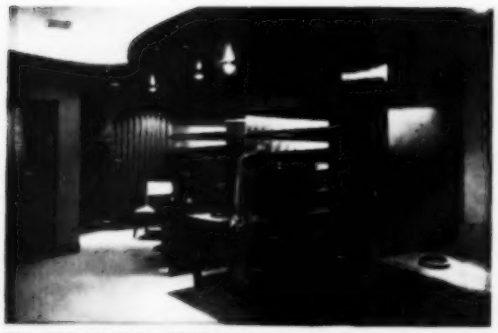
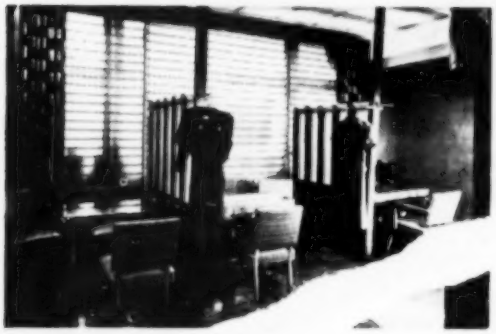


The Brielle Creations' Showroom as designed by Hans N. Wormann features chairs, walls and Modernfold doors covered with Vicrtex V.E.F.* Madagaska. *Photo by: John Gass*

HANS WORMANN CHOOSES VICRTEX V.E.F.* FABRICS



Hans N. Wormann designs the showrooms of Form-Fit Dress with chairs and wallcovering of Vicrtex V.E.F.* Bambu. *Photo by: Gottscho-Schleisner*

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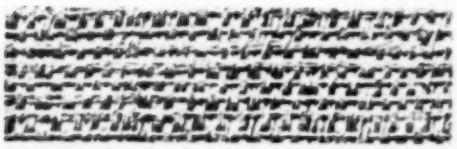
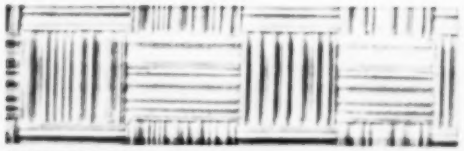
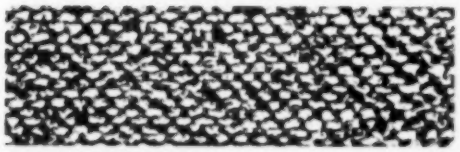


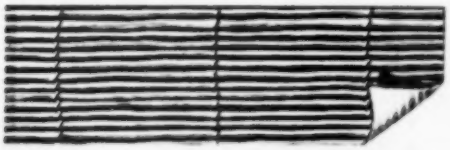
MADAGASKA



IRISH BASKET



NORFOLK BRIARTWEED



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Always in step with the very newest in fashion, Vicrtex V.E.F.* Fabrics are chosen for the very lowest maintenance and decorating costs. These handsome, 3-dimensional textures give almost everlasting service with the most unique wearing advantages. They will never chip, crack, scratch or peel; they're flame, stain and soil resistant; their 28 fadeproof, House & Garden colors wipe clean with a damp cloth; Vicrtex V.E.F.* is practically indestructible! It's high time you learned more about Vicrtex V.E.F.*

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Now you can obtain the added beauty of wood interiors — at surprisingly low cost — by specifying Roddiscraft Panawall. This handsome new *hardwood* plywood paneling is making a tremendous hit with architects and interior designers . . . in both residential and commercial installations.

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Panawall provides beauty that lasts. It ends costly repainting and redecorating for the owner . . . saves money through the years. And it's so easy to install. Made of random-width veneers, V-grooved at the joints — no matching problem. Easy-to-handle 4′ x 8′ x ¼″ panels speed new construction — can be applied over existing walls in remodeling. Cuts installation time and labor costs, too.

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with the beauty and convenience of a kitchen appliance!

NEW PRODUCT

COMPLETE NEW HEATING UNIT

combines "kitchen appliance" beauty with "code boiler" dependability . . . offers easier installation and servicing

Here's a boiler that fits into modern —or remodeled—homes as easily as today's kitchen appliances. It's the Spencer Suburban, a ready-to-install unit for today's basementless homes. It also makes boiler location in older homes much more flexible.

Here's why: The Suburban fits in anywhere. It's compact. It can be set right on a wooden floor—requires no special base. It's so beautiful there's no need to hide it. Completely enclosed in a gleaming white beauty jacket, it rivals kitchen appliances or modern laundry equipment in attractiveness. Connections easily concealed.

Easier to install, just hook up electrical connections, oil and water lines and smoke pipe. That's all.

Easy to service, readily removed plate on top makes all fire tubes easily accessible. No need to disturb jacket or smoke pipe when cleaning. Controls and all working parts can be reached from the front for easier servicing.

Conforms to ASME and SBI Code, the newest member of Spencer's Complete Line, like all Spencer products, conforms to ASME and SBI codes.

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Dimensions — Only 21½" x 32½" x 56"

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Spencer Heaters, Dept. PA-113
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WORLD'S SMALLEST COMPLETE KITCHEN!

ONLY 27½ INCHES WIDE!

Perfect For
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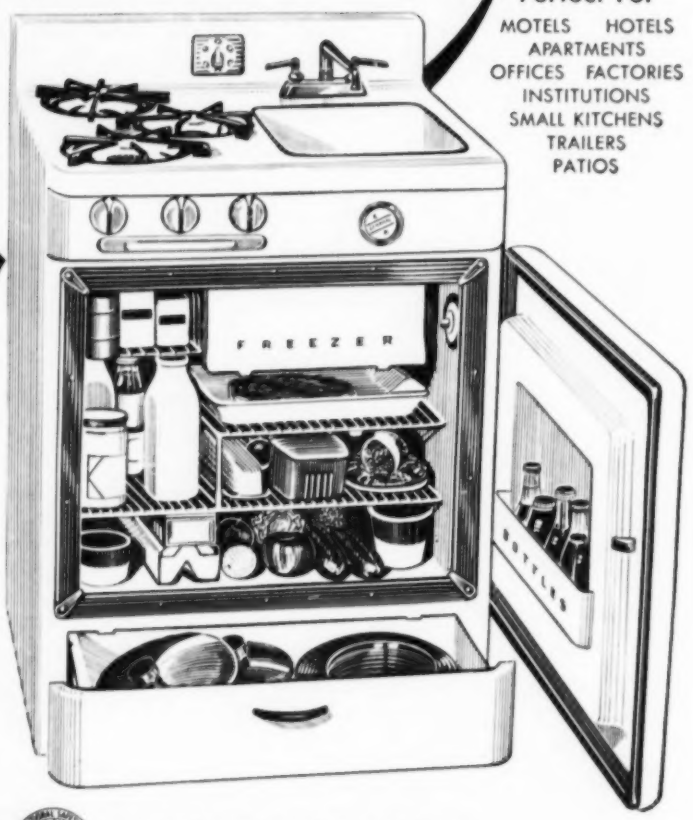

General Chef complete kitchen units fit in 5.4 square feet.
The ideal solution wherever space and dollars are important.

SINK One-piece porcelain top of heavy gauge steel. Faucets and all hardware triple-chrome plated. Units also available without sink.

BURNERS Units come with 3 gas burners (easily adjusted for bottled, natural or manufactured [L.P.] gas), or 3 electric burners (220 V.) or 2 (110 V.).

REFRIGERATOR Four cubic feet of space. *Electric* (sealed, self-oiling Tecumseh unit). Owens-Corning Fiberglas insulation. Convenient bottle shelf in door.

FREEZER Holds 9 ice cube trays, or 12 standard frozen food packages.

STORAGE DRAWER Ample storage space for pots and pans.

5 YEAR GUARANTEE
Every General Chef Unit is guaranteed in writing to give trouble-free service for 5 years!

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WRITE for complete information and specifications if you are building, remodeling, designing — you will be interested in the space and money you can save with General Chef units. Several models are available. Fully guaranteed. WRITE TODAY for complete information and specifications on all General Chef units. We will also send you name and address of distributor nearest you.

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Please send me complete information and specifications on General Chef units, and name of nearest distributor.

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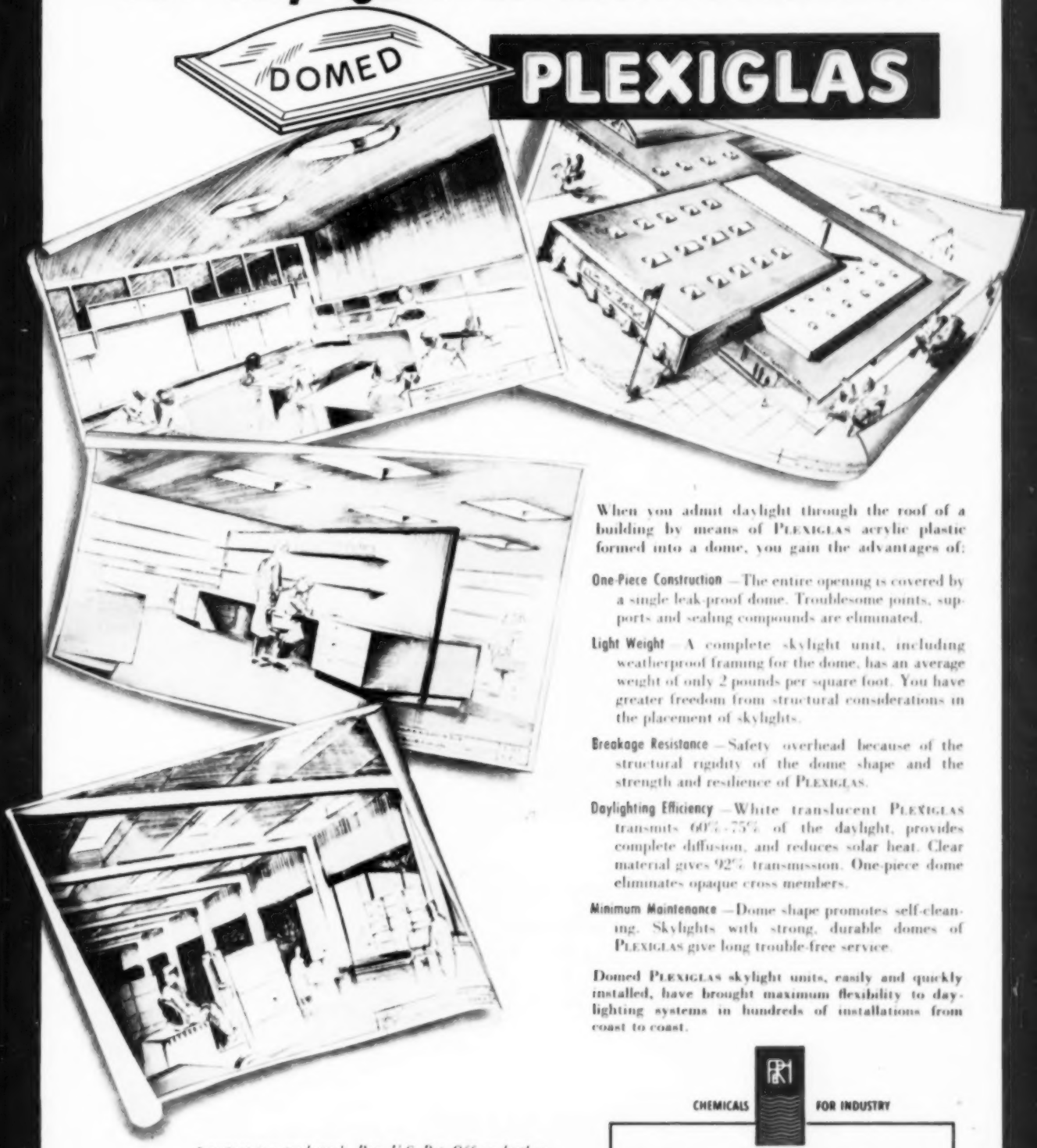
For Skylights at their BEST...



When you admit daylight through the roof of a building by means of PLEXIGLAS acrylic plastic formed into a dome, you gain the advantages of:

One-Piece Construction—The entire opening is covered by a single leak-proof dome. Troublesome joints, supports and sealing compounds are eliminated.

Light Weight—A complete skylight unit, including weatherproof framing for the dome, has an average weight of only 2 pounds per square foot. You have greater freedom from structural considerations in the placement of skylights.

Breakage Resistance—Safety overhead because of the structural rigidity of the dome shape and the strength and resilience of PLEXIGLAS.

Daylighting Efficiency—White translucent PLEXIGLAS transmits 60%-75% of the daylight, provides complete diffusion, and reduces solar heat. Clear material gives 92% transmission. One-piece dome eliminates opaque cross members.

Minimum Maintenance—Dome shape promotes self-cleaning. Skylights with strong, durable domes of PLEXIGLAS give long trouble-free service.

Domed PLEXIGLAS skylight units, easily and quickly installed, have brought maximum flexibility to daylighting systems in hundreds of installations from coast to coast.

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PLEXIGLAS is a trademark, Reg. U.S. Pat. Off. and other principal countries in the Western Hemisphere.

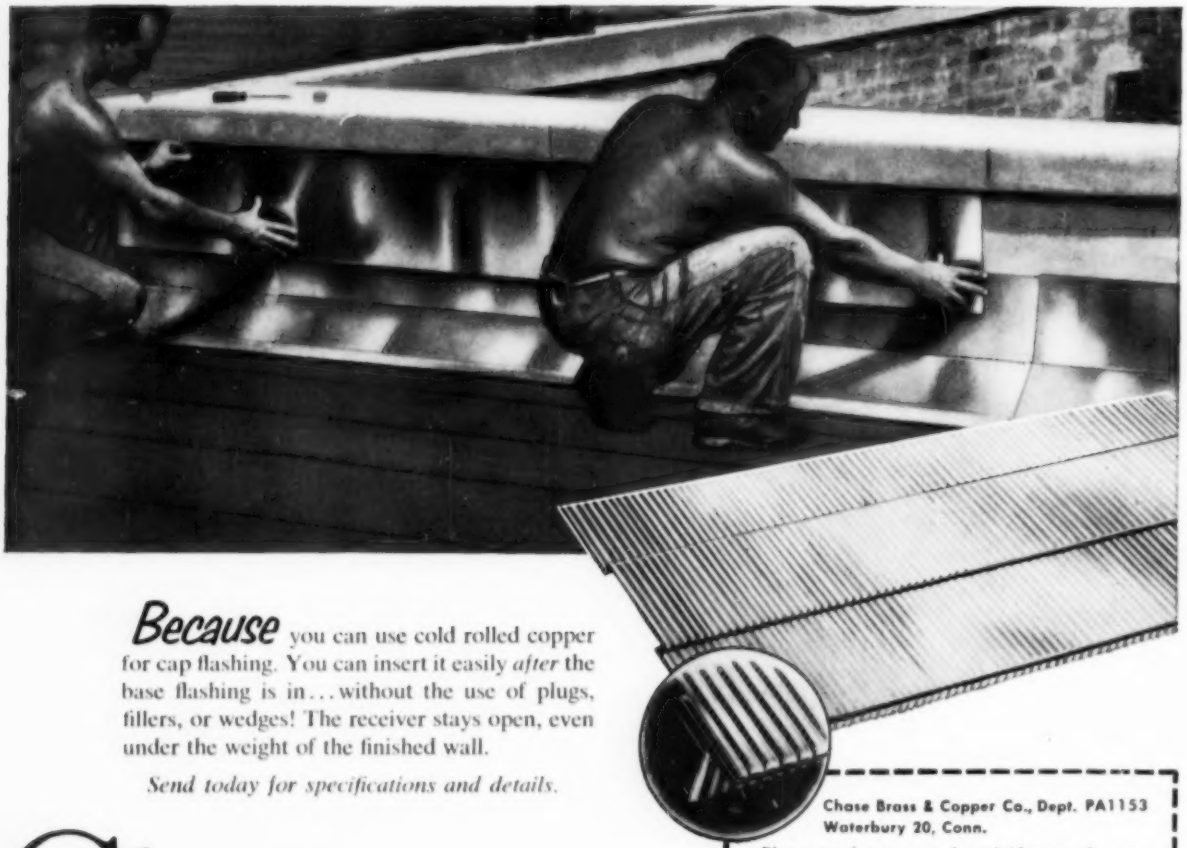
Canadian Distributor: *Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.*

If you've ever yanked up a built-in cap flashing to get at the base flashing...

And then tried to make it lie flat without cracking at the bend...

Then you know why it's better to use the new

CHASE® one-piece thru-wall FLASHING and CAP FLASHING RECEIVER!



Because you can use cold rolled copper for cap flashing. You can insert it easily *after* the base flashing is in... without the use of plugs, fillers, or wedges! The receiver stays open, even under the weight of the finished wall.

Send today for specifications and details.

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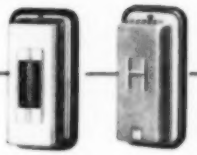
with JOHNSON AUTOMATIC TEMPERATURE CONTROL



St. Patrick Hospital, Missoula, Mont. H. E. Kirkemo, architect, Missoula; D. C. Griffen, mechanical engineer, Seattle; Missoula Hardware & Plumbing Co., mechanical contractors, Missoula.

In modern hospitals, everywhere, Johnson Automatic Temperature and Humidity Control is on 24-hour duty, guarding the health and comfort of patients.

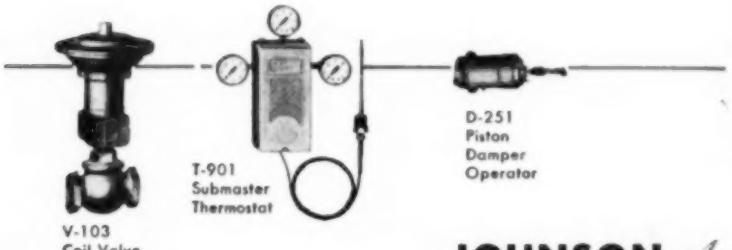
Like all Johnson Control Systems, the installation at St. Patrick Hospital, Missoula, Montana, is designed especially to meet the requirements of this particular building. Here, Johnson Room Thermostats and Humidostats in operating rooms, delivery rooms and nurseries operate Johnson Valves, Dampers and Humidifiers to maintain constant temperature and humidity conditions. Other Johnson-controlled central-fan heating and ventilating systems serve dining rooms, corridors and kitchens.

Johnson "Weather-Compensated" Master-Submaster Control accurately maintains the heating system at exactly the required temperature as determined by the outdoor temperature.

Johnson Control, throughout the entire hospital, means faster recovery and greater comfort for patients. This assurance leaves the staff free to concentrate on technical duties. Hospital management, while primarily interested in patient welfare, looks to precision control of temperatures and humidities for still another essential service . . . obtaining the greatest return from every dollar spent on heating and cooling.

Johnson Automatic Temperature Control also meets the most exacting hospital safety requirements. *Pneumatically* operated, it is completely safe, even in the presence of explosive anesthetic gases. Johnson Humidity Control guards against the dangers of static electricity.

Perhaps *your* hospital presents a temperature control problem. If so, ask an engineer from the nationwide Johnson staff to talk over the desirable features and economy of a Johnson planned-for-the-purpose, installed-for-the-purpose control system. JOHNSON SERVICE COMPANY, Milwaukee 2, Wisconsin. Direct Branch Offices in Principal Cities.



V-103 Coil Valve

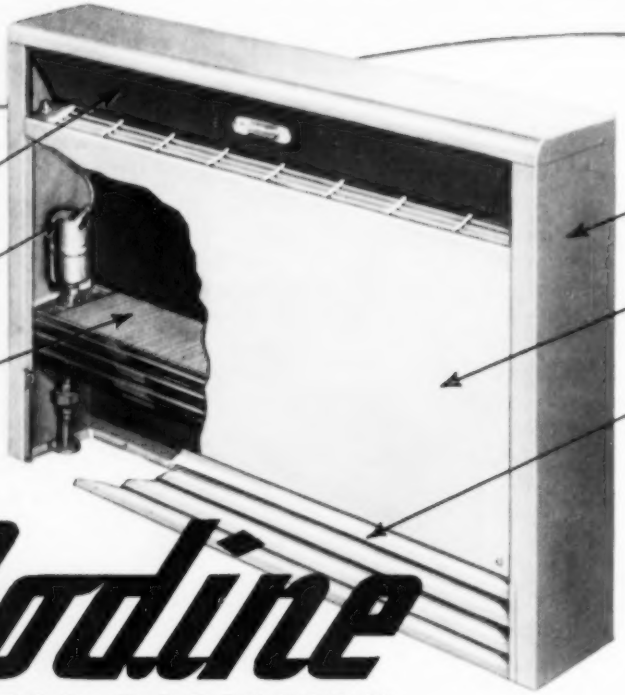
T-901 Submaster Thermostat

D-251 Piston Damper Operator

JOHNSON *Automatic Temperature and Air Conditioning* **CONTROL**

MANUFACTURE • APPLICATION • INSTALLATION • SINCE 1885

Plan your heating for the life of the building



Unique damper, for finger-tip temperature control, conceals curved outlet air grille.

Air vent can be conveniently located at either end of outlet grille—instantly accessible.

All steam-carrying passages are copper or copper alloy . . . brazed for pressure-resisting strength.

Steel enclosure is Bonderized for rust protection, built to "take it."

Front panel is quickly removed and replaced by means of two screws for full access to unit.

Attractive lower grille (optional) snaps in or out, conceals piping.

Popular Type F illustrated. For exposed or recessed installation. Immediately available from most jobbers' stocks.

Modine

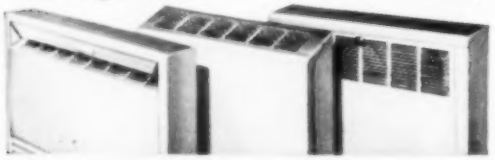
CONVECTOR RADIATION

offers the best in long-life, economical service

Simplicity of styling complements the beauty of both modern and traditional design, also promotes ease of cleaning.

DON'T sacrifice quality on built-in permanent heating equipment. To get the finest in modern, long-life heating . . . at lower over-all costs—follow the lead of top architects and heating engineers. Choose Modine Convector Radiation. It's your assurance of many years of heating system satisfaction. For complete information, see the Modine representative listed in your classified phone book. Or for your copy of Bulletin 251, write Modine Mfg. Co., 1572 DeKoven Avenue, Racine, Wisconsin

Choose from three enclosure types in standard and heavy-duty institutional models for free-standing, recessed or wall-hung installation.



R-1173

For modernization or new construction

Handsome, permanent, insulated curtain walls built at low cost with Cemesto® Panels

The Gibbs Corporation, Jacksonville, Florida, modernizes its machine shop with Cemesto Panels. Permanent, weather-tight, maintenance-free walls of Cemesto Panels replace old, worn wood siding—give a new look, a new lease on life to the building.

NO PAINTING NEEDED!
MAINTENANCE-FREE!
READILY DEMOUNTABLE,
FULLY SALVAGEABLE!

Whether the job is replacing old, worn walls on an existing structure, or selecting a curtain wall material for a new building—Cemesto Insulating Structural Panels permit important economies in design, erection and maintenance. They simplify and speed the job—build strong, fire-resistant, insulated curtain walls with remarkable savings in time, labor, materials!

Many Unique Advantages

Each Cemesto Panel is a *complete, self-contained* curtain wall unit combining high insulation value—great structural strength—pleasing interior and exterior finish. No maintenance needed. Used with attractive new aluminum joint treatment, Cemesto Panels give you curtain walls that are unusually trim and good looking.

Cemesto Panels are quickly attached to steel framing with metal clips, or to wood framing or wood members with nails or screws. Standard sizes readily adaptable to cost-cutting modular techniques. Can also be pre-cut to job specifications at the mill for even greater savings in construction time and cost.

Amazingly Versatile

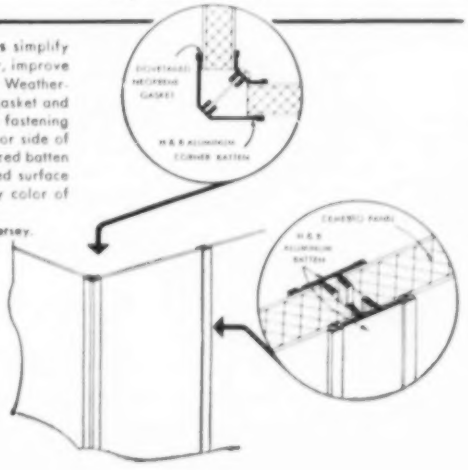
Cemesto Panels consist of a core of Celotex cane fibre insulation, with *non-combustible* cement-asbestos facings bonded to both sides by a vapor-resistant, moistureproof adhesive. They resist fire, weather and wear. Their insulating core is protected by the patented Ferox® process from dry rot and termites.

The smooth, hard, stone-gray surfaces of Cemesto Panels have a light reflection value of 58%. Left unpainted they are permanently maintenance-free. Combine harmoniously with brick, stone, wood and glass, or can be used as the sole curtain wall material.

WRITE TODAY for full data on how you can erect curtain walls, roof decks and partitions—faster and at lower cost—with Cemesto Insulating Structural Panels. The Celotex Corp., Dept. PA-115, 120 S. LaSalle St., Chicago 3, Ill.

New Aluminum Curtain Wall Accessories simplify application of Cemesto Panels, save labor, improve appearance. Trim, new H & B* Aluminum Weather-stripping Battens have built-in neoprene gasket and continuous thread channels for engaging fastening bolts. Since bolts are applied from interior side of curtain wall, the exterior face of the anodized batten presents a smooth, unbroken, satin-finished surface which blends harmoniously with the gray color of Cemesto Panels.

*H & B Enterprise Corporation, Trenton, New Jersey.



Another CELOTEX *Product*

CEMESTO
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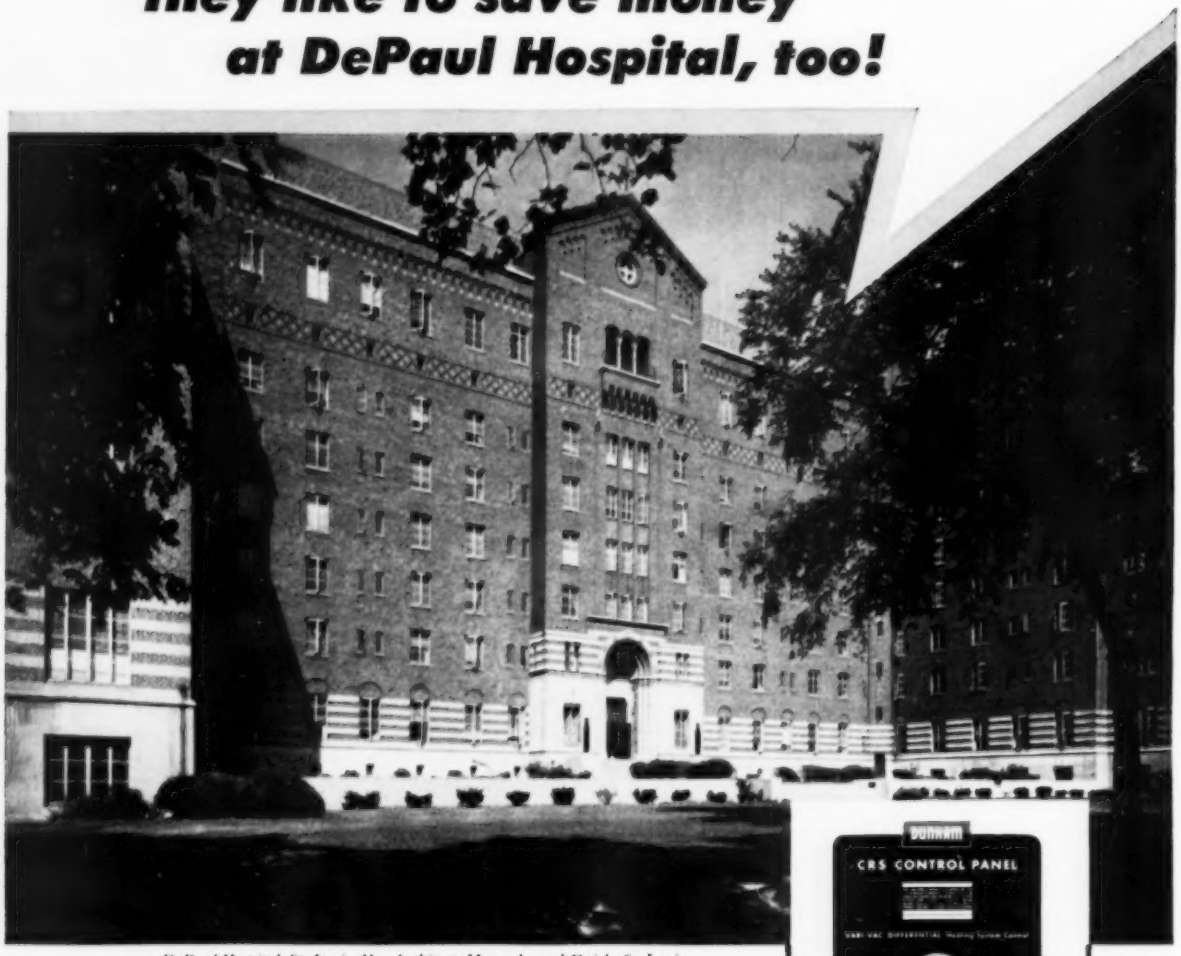
INSULATING STRUCTURAL PANELS

The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

they like to save money at DePaul Hospital, too!



DePaul Hospital, St. Louis, Mo. Architect: Maguola and Quick, St. Louis
Mech. Engr: Harry F. Wilson, St. Louis • *Htg. Contr:* Elliott and Barry Eng. Co., St. Louis

47,000 gallons of oil saved with DUNHAM VARI-VAC HEATING

DePaul Hospital, St. Louis, Mo., *saved over 47,000 gallons of fuel oil in a single heating season* . . . after changing over to Dunham Vari-Vac® Heating.

Hospital authorities state, "Even if we'd saved little or nothing on fuel, we'd still call Vari-Vac a good investment because of the greater comfort we enjoy."

Dunham patented temperature controls on high-vacuum steam mains can lower *your* fuel bills, too. That's because outside weather and inside heat losses *promptly* and *automatically* control steam consumption so that *you use less steam.* What's more, you can "zone heat" with Vari-Vac to meet varying conditions of building exposure and occupancy.

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QUALITY FIRST FOR FIFTY YEARS
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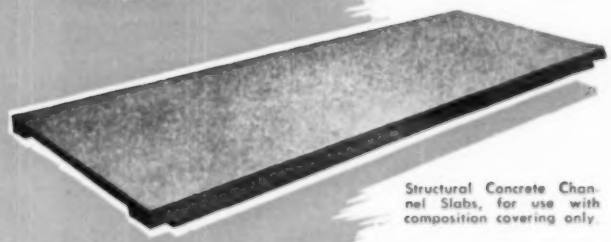
Outlast Them All!

TIME STANDS STILL

for

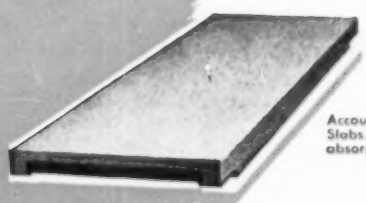
FEDERAL *Featherweight* PRECAST CONCRETE ROOF DECKS..

Nailable Concrete Roof Planks - Type A, tongue and groove sides and ends.



Structural Concrete Channel Slabs, for use with composition covering only.

Nailing Concrete Channel Slabs. A secure base for ornamental covering.



Accoustical Concrete Roof Slabs. Excellent for sound absorption.

HERE is the roof of *proved permanence*. Federal Concrete Roof Decks will not wear out, rust out or disintegrate. Why? Because concrete is the ideal structural material for roof decks, and Federal with over 45 years experience produces concrete roof slabs of matchless quality. No other roof deck provides an equal combination of durability, fire safety, insulating value and all-time freedom from painting and maintenance.

There is a Federal Roof for every kind of permanent building. Four basic types of Featherweight Precast Concrete Slabs and Planks are available, as illustrated, for varying job conditions. Each is steel reinforced for ample, enduring strength. The slabs or planks are easily erected in any weather — no delays regardless of cold, snow or rain. Composition or ornamental covering may be applied immediately. Saves time in getting under cover!

The lightweight concrete Federal Roof Deck often permits important economies in the roof superstructure. And of course lower fire insurance rates are made possible with concrete construction. Our engineers will gladly assist with roof layouts and estimates. For catalog and helpful information please address Dept. P 311.

FEDERAL- *Featherweight*
PRECAST STRUCTURAL CONCRETE ROOF SLABS

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PRECAST CONCRETE TONGUE & GROOVE ROOF PLANKS

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You can design a house around Carrier Weathermaker* air conditioning

or fit the Weathermaker into any house you design

Whether you are going to design a house for a merchant builder or an individual client—whether it will cost $7500 or ten times that much—whether the house is still on the drawing board or even under construction—you can endow it with year-round comfort when you specify a Carrier Weathermaker.

That's all the space it takes —as little as ten square feet

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- adds as little as $4 a month on a 20-year mortgage

When you specify Carrier you have complete freedom of design

(and you can make air conditioning pay for itself)

You won't need wings or ells to catch a breeze—the floor plan can be an inexpensive rectangle.

You can use a solid west wall to insure privacy—to cut down construction costs and reduce heating and cooling bills.

You can place the windowless wall right next to the property line, leaving a much bigger area for outdoor living.

You can save money for your client on movable sash and storm windows, screens, attic fans, louvers and weatherstripping.

You can group windows for a feeling of space and a better view without regard for ventilation.

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• *This is only part of the story! Write for complete information about the Carrier Weathermaker Home. It's of interest to every architect.* Carrier Corporation, Syracuse, N. Y.

Carrier

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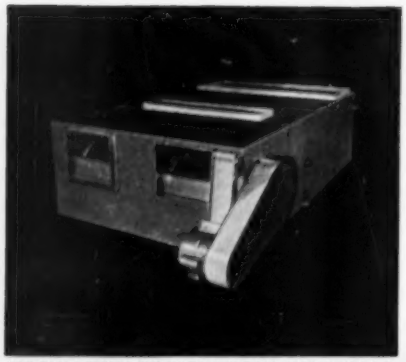
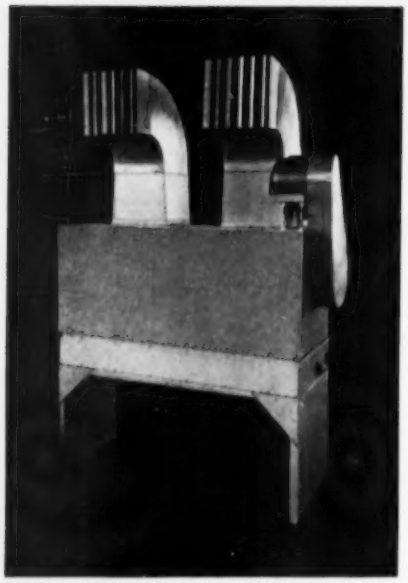
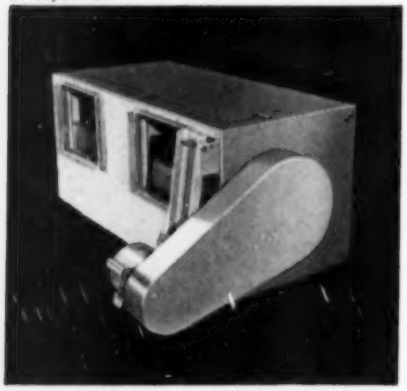
Designed by Albert Kahn Associated Architects & Engineers; J. J. Golub, M. D., *Consultant*



HERMAN NELSON TYPE "B" HEATING AND VENTILATING UNIT. This new model features: low outlet velocities—slow fan speeds—a wide selection of heating coils—available with humidifier—and is ideal for institutional and commercial uses.



HERMAN NELSON TYPE "M" CENTRIFUGAL FAN UNIT HEATER. For industrial applications this brand new unit features—high cfm capacities—high heat output—effective air distribution obtained by moderate outlet velocities combined with specially designed nozzles and deflectors. Standard and heavy duty heating coils available in a wide range of capacities.



HERMAN NELSON TYPE "V" VENTILATING UNIT. This new model features one, two or three fans on a common shaft and housed in compact cabinet for straight-line air movement. Especially useful for booster work in ducts—for untempered air supply or exhaust.

THE NEW *herman nelson* LINE OF AIR HANDLING EQUIPMENT

CHECK THE FEATURES OF THE NEW HERMAN NELSON LINE

SECTIONALIZED CONSTRUCTION — all units are constructed for easy installation. Cabinet arrangements can be readily changed on the job site if conditions make this necessary.

SERVICEABILITY — easy access to all components is provided. Heating coils are accessible through the top or bottom of the cabinets and there's a hinged access door for filters.

BUILT FOR LONG LIFE — all models have double width, forwardly curved fans mounted on over-sized shafts with permanently lubricated bearings — mounted outside of air stream.

The new line is quality constructed throughout by a company with a long established reputation in the heating and air handling field. Member of the N.A.F.M. and I.U.H.A. and all units tested and rated according to the respective codes.

for complete information — on these new models — write: HEATING AND VENTILATING DEPARTMENT, AMERICAN AIR FILTER COMPANY, INC., LOUISVILLE 8, KY.

American Air Filter
COMPANY, INC.
268 Central Avenue, Louisville 8, Kentucky
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AAF herman nelson

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Rugged 3-knuckle hinges, with 3/16" semi-recessed pins, are made of 14-gauge steel both welded and bolted into place.

GREATER SECURITY

Only Medart Lockers have this patented pick-proof "dual latch" mechanism concealed in the lock rod channel. It's pre-locking, positive in action whether door is slammed or gently closed.

STRONGER FRAMES

Top, bottom and sides of frame are die-formed channel-shaped steel, electrically welded into a single rigid unit that stays square and true.

STURDY BOTTOMS

Compare this feature with ordinary lockers! Bottoms won't break or sag. Return flange of bottom rests on steel frame to which it is securely bolted.

ADJUSTABLE LEGS

Heavy malleable iron front legs are adjustable up or down to compensate for unevenness of floors, and spaced for easy cleaning.

Built For Years Of EXTRA Service

MEDART STEEL LOCKERS

Medart Lockers are never built down to a price, but always up to a standard — a standard that guarantees many *extra* years of rugged service, lower maintenance, better appearance — and *far-above-average tamper-proof, pilfer-proof security.*

Virtually every feature now considered a "must" in the modern steel locker was originated and perfected by Medart — and Medart is still the only locker that includes them all. None are better engineered, or better constructed of better materials.

Rely on Medart's 80 years of experience — for unmatched value — and for expert help in solving the most complicated locker problem.

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MEDART LOCKERS

. . . all standard types and sizes, recessed and free standing, are built by Medart.

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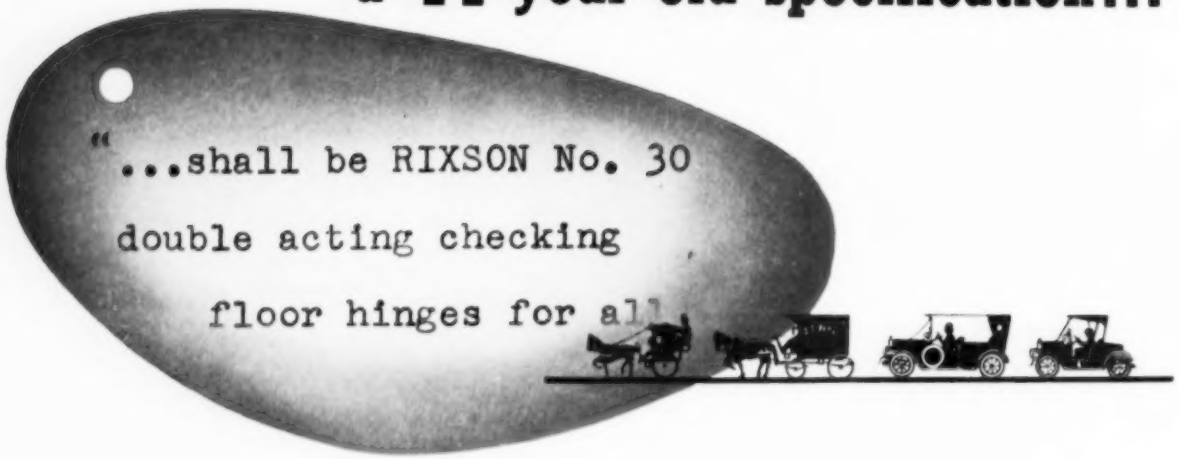
. . . in both permanent and portable types, and in many sizes, is built by Medart for rugged year-after-year service.

a 44 year old specification...



still functioning satisfactorily

In 1909, the architects of this famous building specified RIXSON because "owing to the (building's) great height and exposure to the winds of Lake Michigan, the strength and efficiency of the checking hinges are of greatest importance" also because RIXSON "provides two separate springs and two separate checking mechanisms in one case."*

Today these closers are still functioning after many, many millions of openings and closings of heavy bronze doors . . . and according to the building's management "have required a minimum of care and maintenance."

Though these closers have since been greatly improved in design and function, a specification for RIXSON closers today carries the same assurance of having been "practically" manufactured to withstand the punishment of public usage through the years. Always specify RIXSON by name and number.

*from the printed volume "History of The Peoples Gas Building Construction."

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hardware for
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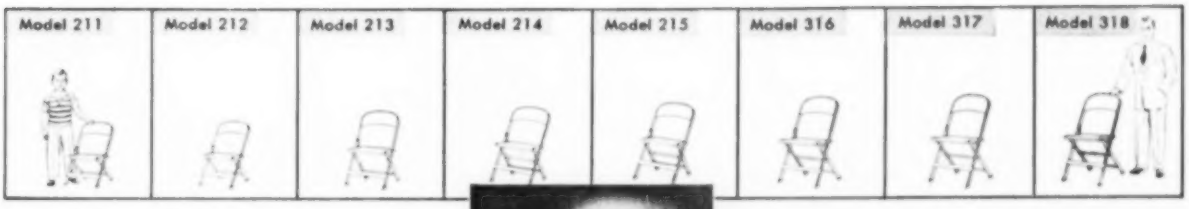

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For Every Age *from Nursery School to Adult*

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In folding chairs, as in everything else, you get what you pay for. There's no decent substitute for quality. It is guaranteed, engineered, quality, built in to definite specifications, that makes Clarin different from other folding chairs.

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Clarin chairs aren't thrown together. They are engineered to exact specifications from specified, quality materials. That is why Clarin can give the only written 10-year guarantee in the industry. Examine their features and you'll understand why thousands of Clarin chairs are still giving satisfactory service after more than 20 years of use.

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SAFER: x-type construction for strength and stability; won't collapse, tip or fold, even though you stand on it.

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MORE CONVENIENT: folds flat within own frame for fast, safe, non-wobbly stacking in minimum space.

EXCLUSIVE FEATURES: Clarin's famous steel-framed, wood seat; healthier, more comfortable, stronger.

Clarin's Patented Rubber Cushioned feet can't scratch floors—immediately replaceable after years of hard use.

Available in many colors.

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Make Comparisons... Once you know the actual facts of how quality is built into Clarin Chairs—once you compare them with any other folding chair—you'll *know* why only Clarin Chairs can satisfy you. Write today for Clarin's FREE Illustrated Catalog of the *only complete line* of steel folding chairs. Or, tell us what type of chair you're interested in and let us send or bring you a sample to examine.

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Posture-designed—in 11", 12", 13", 14", and 15" seat heights—Clarin offers you a juvenile chair for every age group. Engineered to the same quality standards as Clarin adult chairs, the Juveniles are light, stable, easy to carry, will not collapse, tip or fold, even though a child stands on them. Because Clarin Juveniles are scientifically designed for comfort and healthful posture, children are far less apt to get restless sitting in them. Available in colors children adore—Fire-Engine Red and Kelly Green. Also in Opal Grey and Bronze. Write today for full details and moderate prices.

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A Tablet Arm Chair *That Folds!*

Here is engineering at its finest—the greatest advance in folding chair history. The Tablet Arm is a built-in part of the chair—not an attachment. Yet it folds down at the side, out of the way, when not needed, so the chair can be used for ordinary seating. The entire chair folds flat in seconds, for quick, safe stacking. Folded depth only 5". Foam rubber cushioning if desired. A space-saving Godsend for conferences—group meetings—recreation rooms, etc., etc. Write today for full information.

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☐ Folding Tablet Arm Chairs. Number needed
☐ Send full information. ☐ Send catalog of complete line.

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Clarin

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distinctive design

Architectural concrete slabs help textile firm look "at home" in residential district

Blending this laboratory and office building with its suburban surroundings was a public-relations problem the architect solved with the help of architectural concrete slabs. Made with special aggregates in a matrix of Atlas White Cement, the white and light buff pre-cast sections provide an attractive setting for other textures and colors . . . enhance the over-all beauty of the structure.

There's economy, too. The large, comparatively lightweight construction units reduce building time and labor, speed occupancy, and provide outstanding durability for a minimum of future maintenance. These versatile facing slabs offer the utmost in design flexibility . . . are tailor-made with appropriate aggregates and pigments to secure the color, texture and form desired. Because Atlas White Cement is a true, uniform white, it enhances the rich color values of both pigments and aggregates.

Atlas White Cement complies with ASTM and Federal Specifications. If you would like to have further information, see SWEET'S Catalog, Section 12g/Un and 3d/Un, or write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

DURABLE 4' x 5' sections of architectural concrete offer design facility unmatched by other materials. Raised white letters were cast with individual slabs on reddish-brown background. Architect: Charles C. Hartmann, General Contractor: C. M. Guest & Sons, Mo-Sai pre-cast slabs by: Mabie-Bell Co.—all of Greensboro, N. C.

PA-WCSL-43

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FOR TERRAZZO, PAINT, SLABS, STUCCO

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3-D Store Fronts

YES, three dimensional effects add powerful attraction to store fronts too and it's no illusion. *Depth*, the third dimension provided by full vision design, makes the complete store interior clearly visible from the outside. It's a sure-fire attention getter and sales stimulus.

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Brasco Aluminum Entrances further enhance the depth effect. Narrow stiles and a minimum of trim permit utmost visibility. Complete absence of exposed fastenings makes the entire entrance area more inviting. Go modern with Brasco for handsome, soundly constructed **3-D** store fronts and entrances . . . and watch the buying public respond. Complete literature and construction details on request to Dept. P 311.

Brasco Materials Used On Above Installation

No. 208 Sash
No. 177 Sills
No. 46 Flutes on Cornice
No. 420 Facing Moulding on Column and Vestibule Returns
2 Brasco Entrances

SEE OUR CATALOG IN SWEET'S FILE ARCHITECTURAL

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A COMPLETE LINE FOR EVERY DESIGN
BRASCO MANUFACTURING CO.
HARVEY • (Chicago Suburb) • ILLINOIS
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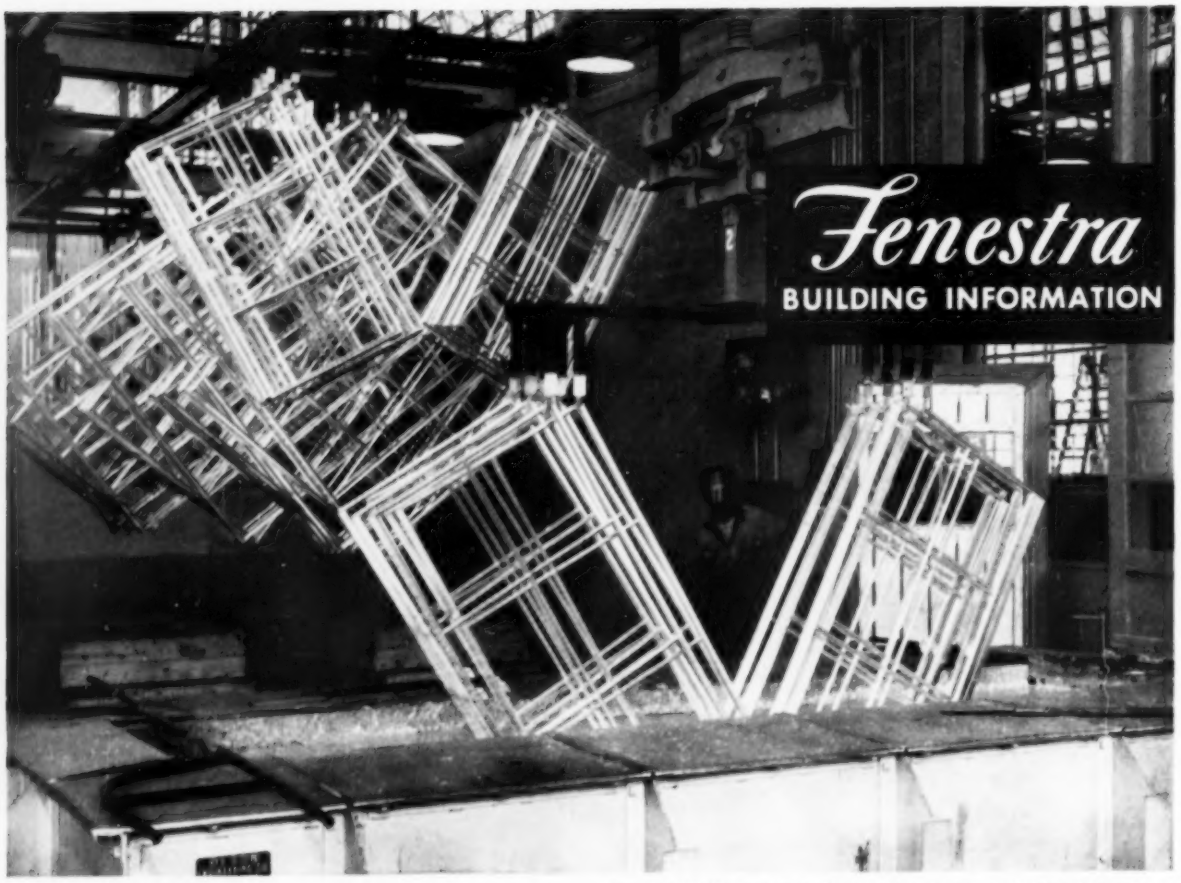

Fenestra Windows at one stage of Fenestra Super Hot-Dip Galvanizing

You'll Save Thousands of Dollars with these Windows!

An average plant's painting bills come to over $3,600 every few years! You can *save* this money. Fenestra* Super Hot-Dip Galvanized Steel Windows are completely protected from rust! These strong, steel windows practically eliminate expensive maintenance for the life of your building and *never need painting*. Yet Fenestra Super Hot-Dip Galvanized Steel Windows cost remarkably little.

Fenestra is the only window manufacturer with the special plant, the electronic controls, the continuous galvanizing and bonderizing process, to Super Hot-Dip Galvanize Steel Windows.

Contact your Fenestra Representative today—he's listed in the yellow pages of phone books in principal cities. And send for your free booklet on Fenestra Super Hot-Dip Galvanized Steel Windows. Write Detroit Steel Products Company, Dept. PA-11,3409 Griffin St., Detroit 11, Mich.

*

BEND TEST shows why Fenestra Steel Windows are called Super Hot-Dip Galvanized. When two pieces of galvanized steel are bent, then straightened, some types of galvanizing crack open, leaving the steel vulnerable. The Fenestra piece *stays* protected.

Fenestra

SUPER HOT-DIP GALVANIZED STEEL WINDOWS

from the only plant in America especially designed to Hot-Dip Galvanize steel windows

Additional Hospital Space At No Additional Cost . . .

when you specify "Modernfold" doors, according to Architect Gerald G. Scott, Portland, Oregon. Writes Mr. Scott: "'Modernfold' doors were specified as an alternate to the Specifications for the Central Oregon District Hospital, but when the bids were opened, it became apparent that these doors could be had for no additional cost over wood doors. Their use was more than justified by an overwhelming list of advantages, including economy, but particularly by their space-saving feature. The Contractor was especially pleased because they relieved him of the responsibility of hardware, painting, and installation; resulting in less time on his part spent during the finishing stage of the job."

Pictured is one of the rooms from Central Oregon District Hospital, Redmond, Oregon. Scott & Payne, Portland, Architects.

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For every room division or door closure problem, there's a simple, economical, space-saving solution. That's "Modernfold," the original folding door.

Specifying "Modernfold" doors keeps clients happy. For these steel-framed, vinyl-covered doors can't be equaled *anywhere* for quality of design . . . for quality and strength of materials.

And because this line is *complete,* you're sure to save time and get exactly what you want when you specify better looking, easier operating, longer lasting "Modernfold" doors.

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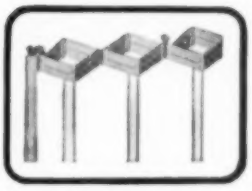
Better Looking
Fabric covering conceals all operating mechanism. No cornice needed. Adjustable trolleys keep doors hanging flush to jamb.



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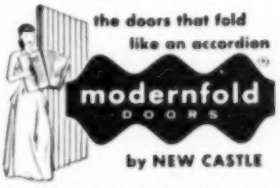
Balanced hinge construction both top and bottom. Trolleys attached at hinge intersections. No sidewise twist or pull possible.

Better Background
Over 100,000 "Modernfold" doors now in operation—a backlog of space engineering experience that's your guarantee of satisfaction.

YOU CAN'T GET MORE IN A FOLDING DOOR



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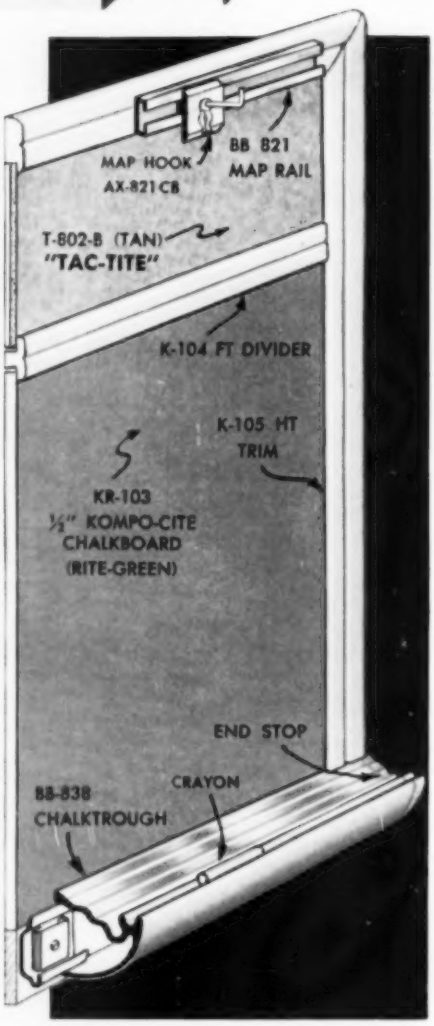

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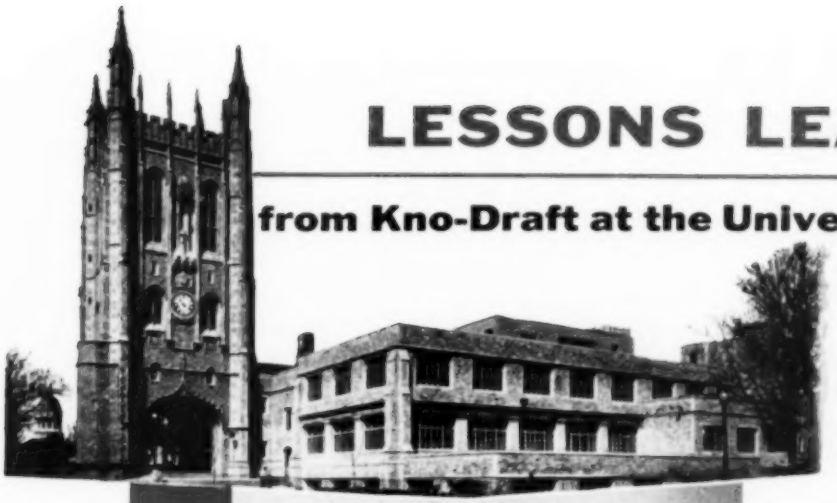
LESSONS LEARNED

from Kno-Draft at the University of Missouri



University of Missouri,
Union Memorial Building, Columbia, Missouri
Consulting Engineer:
John D. Falvey, St. Louis, Missouri
Mechanical Contractors:
A. C. Bishop Co., Columbia, Missouri

LESSON #1: Kno-Draft Adjustable Air Diffusers permit you to set and maintain the exact volume and flow pattern of conditioned air to assure maximum comfort—*uniform temperature without drafts*—throughout the conditioned area.

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LESSON #3: Kno-Draft Adjustable Air Diffusers are "at home" with any architectural style, and there is a complete line of types and sizes to meet all requirements.

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Structural Engineers:
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Recent example is Section III, St. Nicholas Houses—six 14-story-and-roof units . . . first pour, March 22, 1953, topped out June 30 . . . 84 floors concreted by C. E. YOUNGDAHL & COMPANY, INC., in 69 working days.

Maximum job speed and economy, due to tight schedules, based on dependable 'Incor'* 24-hour stripping strengths . . . engineered forms, built to closest tolerances for streamlined erection efficiency . . . expert utilization of skilled work force.

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*Reg. U. S. Pat. Off.

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we still need hospitals

After about five years of unusual activity in hospital design and construction, we seem to be bogging down in that important field. It is hard to understand why, because the need is still obvious to anyone who even glances at the statistics, and is even more sharply realized by the citizen who finds it difficult to arrange hospital accommodations and by the doctor who can't find beds for all patients who require them. We now have less than 10 beds per thousand of population, even counting many beds unacceptable by good standards and also the government hospitals, where accommodations are not available to all the civilian population. By minimum standards, we should have about 12 beds per thousand. In the meantime, more hospitals are becoming obsolete each year, our population is growing by about 1.5 million a year; and the rate of new hospital construction seems, right now, to be decreasing. We are losing ground.

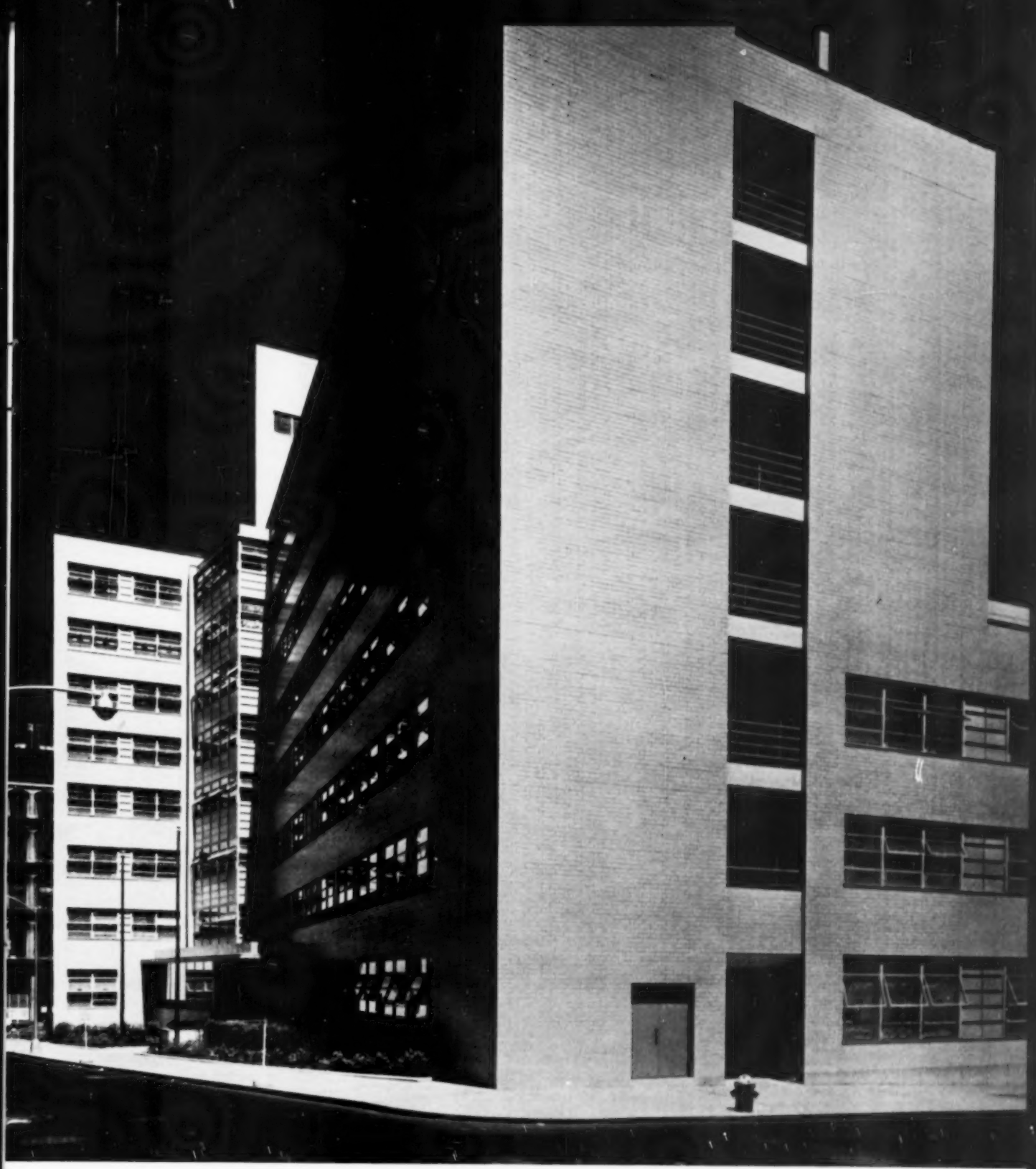
Are the architect and engineer concerned with this problem? We think that they are. P/A's surveys indicate that hospital work is considered highly desirable by the average practitioner. It is an interesting and a satisfying commission; the client is usually a good one to work with; and fees are generally adequate for the work involved. Despite certain difficulties that this building type involves—occasional trouble with hospital consultants who can't keep their hands off architecture, the pre-eminence of the "specialist," and the continued existence (even though it is no longer publicized), of a list of architects "recommended" by the American Hospital Association—the spread of hospital work in recent years has brought many new designers into the field. And they have enjoyed the experience.

What can the architectural and engineering men do about the present slow-down? One thing has been done effectively, but it is a job that will have to be repeated each year—that is support of the Hill-Burton Act. This Federal-aid program has had universal approval from hospital people, as a means of assistance to states that avoids interfering with states' rights or private activity. It is now extended to 1957, but appropriations must be made each year. Last summer, support from the architectural profession was most helpful in

saving a large part of the appropriation that had been asked for, despite cuts proposed by Congress. Hill-Burton provisions and money are largely responsible for the activity in private, voluntary hospital construction, and have been the means of bringing hospital commissions to many architects and their consulting engineers.

Another thing the forward-looking practitioner can do is to become more familiar with the field—in his own community, and in its wider implications. A good active architect can be of great help to a good active hospital administrator, hospital board, and promotion agency, in "selling" the community on the need for funds for better hospital facilities. This helps everybody. With a greater perspective, he might study trends in medical care, and find building-type activity in line with the current thinking in the medical and hospital professions. Briefly, this includes: greater emphasis on group medical practice, in the hospital and out (office buildings, clinics, medical offices in hospitals); health insurance plans (New York's H.I.P. is producing a number of interesting new buildings to house its activities); increased interest in old-age problems (geriatrics structures, chronic-disease buildings); greater knowledge of and interest in community disease problems (health clinics in schools, in factories, in office buildings); the growth of the small local hospital, despite disclaimers as to its efficiency a few years ago (community "health facilities," combining sanitation offices, clinics, private doctors' offices, minimum hospital facilities).

We recommend to our readers that they peruse the article in this issue on the curriculum of the new Albert Einstein College of Medicine. There are made clear the emphases in medical practice which will be important in the coming period; how doctors are going to be trained to practice. There will be much work involved for architects, in newly developed building types, as well as in hospital design, as we understand it now. Large city hospitals, county hospitals, semi-rural hospitals—such as the ones illustrated in this issue —are needed now, more than ever before. The pressures will become too great to resist. And when the new surge of work comes, designers must be prepared to meet it with knowledge as well as interest.



location	New York, New York
architects-engineers	Lorimer & Rose
project manager	William E. Jeffrey
structural engineers	Roberts & Schaefer Company
mechanical consultants	Kersunky, Weller & Gooch
general contractors	Cauldwell-Wingate Company

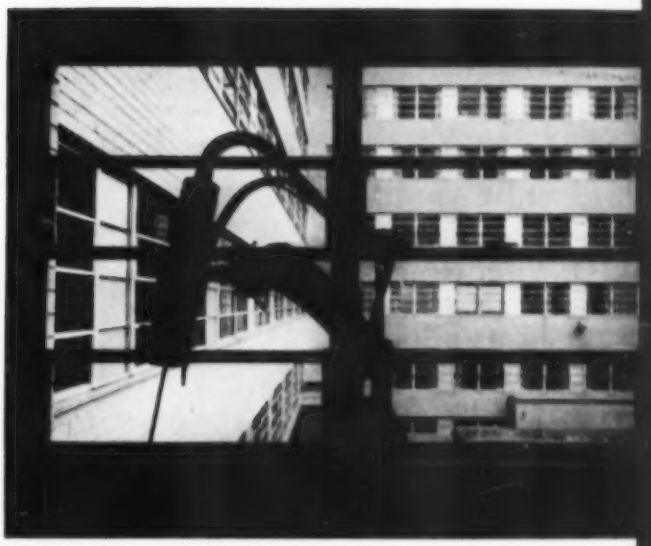
hospital construction: metropolitan

The (lower) ground floor occurs at the rear of the hospital, which is arranged in a U shape around an ambulance, trucking, and staff-car-parking courtyard. Most patients' rooms face the south and southeast.

Photos: Lionel Freedman

The Beekman-Downtown Hospital is in one of the most motley and congested areas of Manhattan's lower east side. A maze of blocks of old-law tenements and huge, low-rent housing projects crowd the site on the north; the noisy waterfront, with its turmoil of ship traffic and trucking, lies to the east; and, almost as near on the south are the overbearing skyscrapers of Wall Street.

To serve the diverse daytime population of the area, needed health-care facili-



Front-entrance detail (below) *highlights the exterior wall treatment—4" x 12" glazed, light-gray brick for outer withe of cavity-wall construction (inner withe of 4" cinder block); anodyzed aluminum sash of projected type, with column surfacing and spandrel areas made up of standard-sash elements that are "glazed" with aluminum sheets and backed with glass-fiber insulation.*

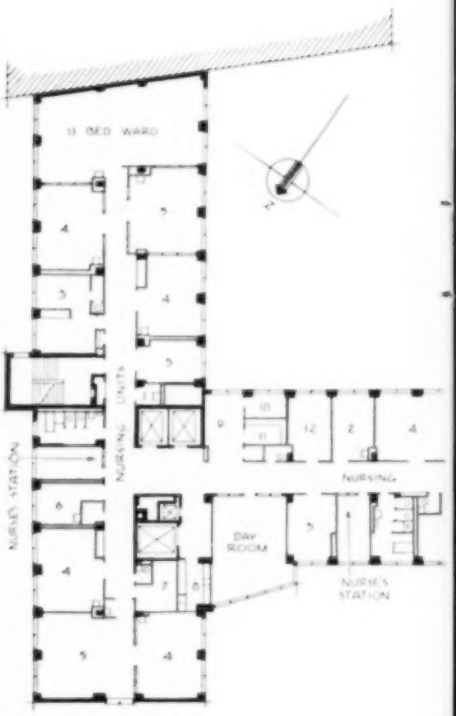
ties range from unusual services for accident and emergency cases, to large public wards for those with little money, to handsome private rooms for top business executives. This also implies both an exceptionally equipped out-patient department and a suite of doctors' offices where private consultations can take place.

In addition to patient-care facilities, there also had to be unusual residence quarters for nurses, internes, and other staff members, to attract and maintain a first-rate staff. And, with the heavy incidence of emergency cases—office workers with all sorts of minor ailments and accidents; street cases; longshoremen with hailing hooks impaled in arms or legs—it was essential to have a full ambulance complement.

The result is a $5\frac{1}{2}$ millions, 8-story, 170-bed hospital arranged in a combined U- and T-shaped plan. A fortunate aspect of the limited site, surrounded on three sides by city streets, is an 11-foot difference in levels, allowing two floors of the building to come at grade. In effect, this almost doubles the site area, with regard to providing necessary lower-floor functions. At the main entrance level are public lobby, administrative offices, doctors' staff lounge, and a complete wing of outpatient-screening facilities. At the lower ground level (to the rear of the hospital) is ambulance garage, emergency department, general goods receiving, main kitchen, and employes' cafeteria.

Third Floor

1 janitor
2 sterilizing
3 scrub-up
4 plaster room
5 instrument storage
6 anesthesia room
7 nurses' work room
8 clean-up room
9 surgical supervisor
10 anesthetic storage
11 stretcher space
12 sterile supply
13 unsterile supply
14 linen supply
15 nurses' locker room
16 doctors' locker room
17 glove room
18 central sterile storage
19 cystoscopy
20 dark room
21 photo fluoroscope room
22 office & viewing room
23 sterilizing room
24 photography
25 treatment room
26 stimulator room



Fourth Floor

Lower Street Level

1 janitor
2 can washing
3 garbage refrigerator
4 ice making room
5 compressor room
6 dairy refrigerator
7 freezer
8 meat refrigerator
9 vegetable refrigerator
10 bakery
11 dishwashing
12 dietician's office
13 serving area
14 bath and toilet
15 utility room
16 fracture
17 treatment
18 waiting
19 control
20 emergency equipment
21 stretcher alcove
22 emergency entrance

First Floor

The plan in general takes the form of a U surrounding the wide, rear courtyard, on which most facilities face, receiving south or southeast sun. The two court driveways open onto one-way streets at either side. In the 4-ambulance garage, two ambulances are parked facing Spruce Street, and two facing Beekman. Thus, encircling the block is avoided, and service is as fast as possible.

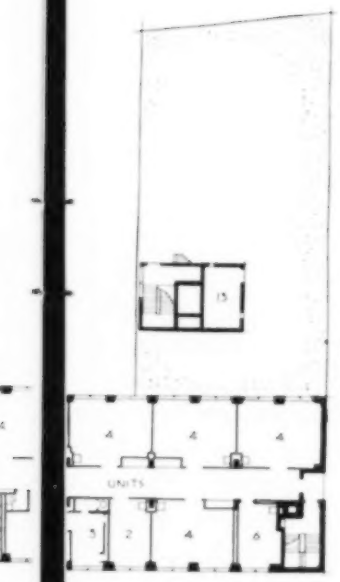
Below the lower street level is a basement which contains mechanical equipment, storage and maintenance facilities, morgue and autopsy room, and employes' lockers, toilets, and lounge. The building is heated by purchased steam; hence, no boiler plant was required. Construction is based on a 22-ft module, exactly accommodating the typical 4-bed wards. The plumbing and mechanical services are vertically and horizontally co-ordinated to this module.

The main kitchen (on the lower street level) has latest stainless-steel equipment. To assist sanitary maintenance, flooring is mosaic tile; walls have glazed-tile surfaces; and an aluminum-pan acoustical ceiling is used. A specially developed exhaust system for ranges and steam tables insures safety from grease fires. Food portioning is handled by a mecahnical, conveyor-type steam table to govern diet accuracy with minimum supervision. And meals are distributed to patients in individual, preheated, hot-plate containers. Diet kitchens on each floor are eliminated.

Because of the two street levels, the main entrance lobby is remarkably spacious. A separate entrance from Beekman Street to the three-story outpatient department eliminates traffic confusion.

All facilities serving the four operating rooms on the third floor have special, carbon-impregnated terrazzo floors that permit controlled dissipation of static electricity and protect against anesthetic explosions; walls of the operating suite are sheathed with impervious, porcelain, nonglare mosaic tile; instrument cases and auxiliary equipment are of stainless steel.

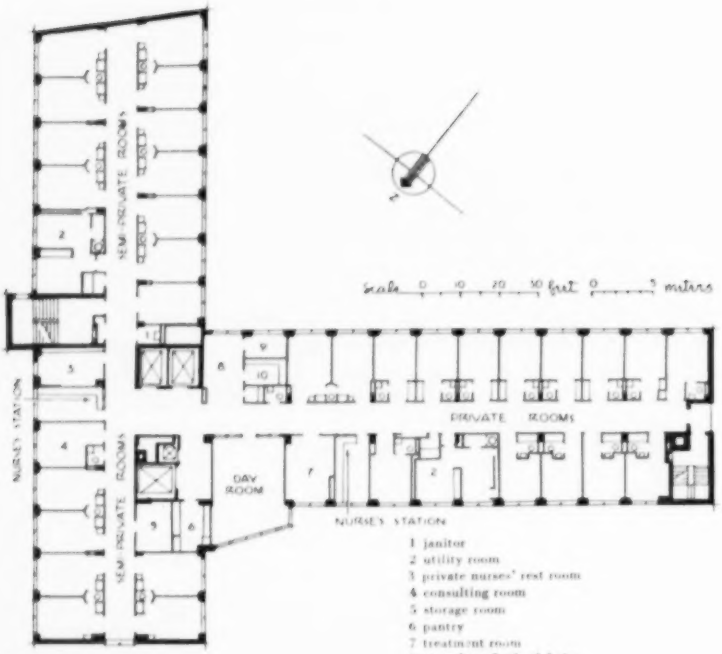
Very similar in plan to the fourth floor, the fifth has three major elements—a 24-bed wing for male medical patients; a pediatric wing of 12 beds with a nursery for 3 cribs; and a women's wing of 15 beds. Private and semiprivate rooms occupy the sixth floor, while the seventh is made up of unusually commodious rooms for nurses *(plans overpage)*. The eighth floor consists of two major wings —the one toward Spruce Street, living quarters for 10 internes, plus a recreation deck; the other, composed of suites for the superintendent and assistant superintendent. In addition, there is a patients' solarium and sun deck.



1 janitor
2 2-bed room
3 bed pan & utility room
4 4-bed ward
5 treatment room
6 quiet room
7 storage room
8 pantry
9 stretchers & wheelchairs
10 flower room
11 linen room
12 consulting office
13 fan room

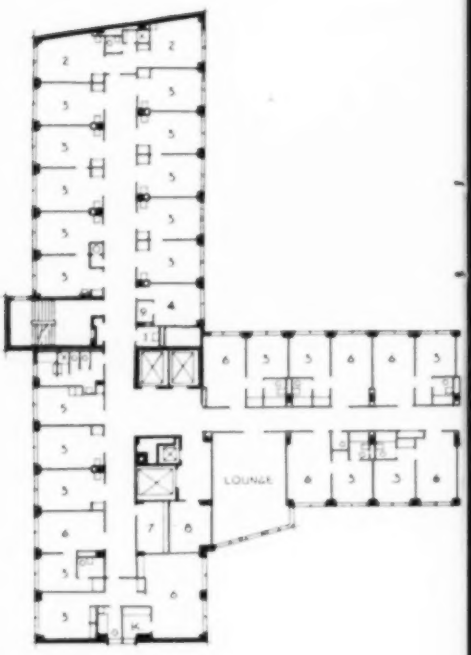
1 janitor
2 clothing
3 private office
4 compensation
5 interview
6 investigation
7 pharmacy
8 retiring
9 city investigator
10 admitting office
11 comptroller
12 director of nurses
13 history
14 study alcove
15 record room
16 bed room
17 chauffeurs' room
18 superintendent
19 secretary
20 assistant superintendent
21 telephones
22 doctors' lounge

1 janitor
2 treatment room
3 exam & treatment room
4 doctor's office
5 work room
6 fluoroscopy
7 record room
8 men's lounge
9 men's locker room
10 women's lounge
11 women's locker room
12 aide room
13 serving area
14 control & waiting room
15 audio room
16 basal metabolism
17 electrocardiograph
18 dark room
19 superficial therapy
20 dermatology
21 minor operating
22 utility room



1 janitor
2 utility room
3 private nurses' rest room
4 consulting room
5 storage room
6 pantry
7 treatment room
8 stretchers & wheelchairs
9 flower room
10 linen room

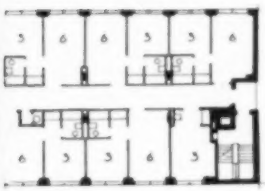
Sixth floor



Seventh floor (NURSES RESIDENCE)

Treatment stations in the second-floor outpatient area (above) are all equipped with rotational dressing facilities and are so interconnected as to permit great flexibility of clinical assignments on various days. On the third floor, electrotherapy units along the south wall (right) may be curtained for privacy.

1 janitor
2 female interne
3 bed room
4 nurses' sitting room
5 laundry
6 living room
7 linen room
8 storage room
9 pantry



Typical of all operating rooms, the one shown (above) *is fully air conditioned and has walls of ceramic mosaic tile to facilitate cleaning. Conductive terrazzo floors provide controlled drain-off of static charges. The rooms receive daylight, but to maintain temperature and humidity conditions there are inner glass screens, with temperature air streams creating a pressurized barrier, to prevent dust infiltration.*

A general laboratory on the third floor (right) *overlooks the rear courtyard; other diagnostic facilities adjoin.*

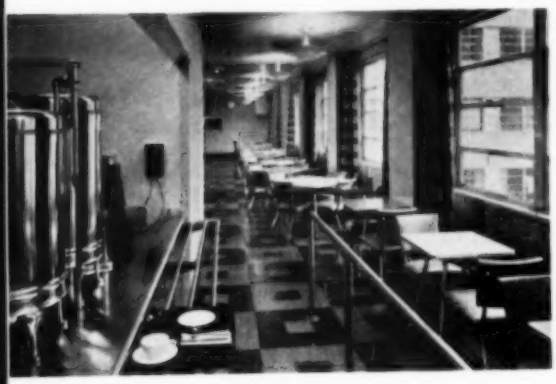
Traction beds occupy an 11-bed ward (below, left) *at the rear of the fourth floor. The typical four-bed ward* (center) *is bright, with a wall of colorful, scrubable wallpaper. Semiprivate rooms* (right) *are equally cheerful. In the pediatric wards* (bottom) *gay activity murals of washable wallpaper are used.*

hospital construction: metropolitan

The ample public lobby provides comfortable waiting space for visitors. Opening directly off the lobby is a visitors' coffee shop; the elevator lobby; and the entrance to the administrative offices.

The combined library-conference room (separable by an accordion partition) occurs on the second floor, just above the main entrance area.

Colorful day rooms (right), with wall-to-wall strips of windows occur in the vertical element above the main entrance. A nurses' lounge and internes' recreation room occupy this same position on the seventh and eighth floors. The staff cafeteria (below) overlooks the rear court along the southwest wall of the building.



construction

Foundation, frame, floors, roof: foundation piles—Raymond Concrete Pile Co.; reinforced-concrete frame, floors, roof—Lone Star Cement Corporation; brick and cinder-block cavity walls. **Wall surfacing:** exterior: glazed brick—Hanley Company, Inc.; interior: generally plastered; wallpaper—Salubra Sales Corp. and Joanna Western Mills Co.; toilets: ceramic mosaic tile—National Tile & Marble Corp. **Floor surfacing:** asphalt and vinyl-plastic tile—The Mosaic Tile Company; conductive terrazo in operating area—V. Foscato, Inc. **Ceiling surfacing:** kitchen and corridors: acoustically-treated ceilings—Simplex Ceiling Corp.; offices and laboratory: hung plaster, painted; patients' rooms: exposed concrete, painted (plywood forms—Georgia Pacific Plywood Company). **Roof surfacing:** 20-year built-up roofing, gravel surface—Johns-Manville Corp.; recreation terrace: asphalt-treated cane-fiber board—Metropolitan Roofing Supplies Co., Inc. **Waterproofing and dampproofing:** membrane waterproofing — Johns-Manville Corp. **Insulation:** acoustically-treated ceiling — Simplex Ceiling Corp.; thermal: glass fiber—Libbey-Owens-Ford Glass Company; wood-fiber slabs—SK Insulrock Corporation. **Roof drains:** Josam Manufacturing Company. **Partitions:** cinder block, plastered; toilets: marble—John Cullo Marble Co., Inc. **Windows:** aluminum projected sash—J. S. Thorn Company; glass—Libbey-Owens-Ford Glass Company and Pittsburgh Plate Glass Company. **Doors:** interior: hollow-metal doors—Superior Steel Door & Trim Co., Inc.; flush hardwood doors—Hardwood Products Corporation; steel rolling door—Cornell Iron Works, Inc.; elevator doors—The W. S. Tyler Co.; polished plate-glass entrance doors with extruded-aluminum frames—Pittsburgh Plate Glass Company. **Hardware:** lock sets, door closers—Russell & Erwin Division, The American Hardware Corporation; hinges—The Stanley Works. **Paint and stain:** paint—Devoe & Raynolds Co., Inc. and National Chemical & Mfg. Co.

equipment

Kitchen and laundry: food distribution units—Mealpack Corp.; stainless-steel kitchen equipment—Straus-Duparquet, Inc.; refrigeration—York Shipley, Inc.; clothes chute—Haslett Chute & Conveyor Co. **Intercommunication:** nurses' call system—Auth Electric Company, Inc. **Laboratory:** X-ray filing cabinets—Picker X-Ray Corp.; X-ray protection—Bar-Ray products, Inc.; laboratory equipment—Hamilton Manufacturing Company. **Elevators:** hoisting equipment—Westinghouse Electric Corporation; cabs—The W. S. Tyler Co.; dumbwaiter combination—John W. Kiesling & Son, Inc. **Lighting fixtures:** desk and floor lamps with glass-fiber shades—Koch & Lowy Mfg. Co.; office area: fluorescent fixtures—Globe Lighting Products, Inc.; lobby area: nondust catching fixtures—Litecraft Manufacturing Corp.; hospital ward area: dual-purpose wall bracket lamps—Kurt Versen Co. **Electrical distribution:** service entrance switch—Federal Electric Products Co.; panelboards, multibreaker—Lexington Electric Products Co., Inc.; cable—Crescent Insulated Wire and Cable Co.; conduit—Spang-Chalfant Division of National Supply Co.; wiring devices—The Bryant Electric Company. **Plumbing and sanitation:** water closets, tubs, lavatories—Crane Co.; toilet seats—C. F. Church Mfg. Company; water generator—The Patterson-Kelley Co., Inc.; flush valves—Coyne & Delany Co.; bathroom accessories and medicine cabinets—Kaytel, Inc.; incinerator—Sargent Incinerator Co.; sterilizing equipment—American Sterilizer Co.; sprinklers—Automatic Sprinkler Corp. of America; city water supply system. **Heating:** serviced steam—New York Steam Corporation; fin-tube radiation—Kritzer Radiant Coils, Inc.; steel piping—Wheeling Steel Corp.; controls—The Powers Regulator Company. **Air conditioning:** (operating suite) unit and compressor—Carrier Corp.; Freon refrigerant; grills—Tuttle & Bailey, Inc.; diffusors—Connor Engineering Corporation; blowers—American Blower Corporation; filters—American Air Filter Co., Inc.; controls—The Powers Regulator Company; cooling coils—Kennard Corporation.

hospital construction: county

location	Lawton, Oklahoma
architect	Paul Harris
hospital consultant	Paul H. Fesler
mechanical-electrical engineers	Carnahan & Thompson
structural engineer	Edgar B. Wilson
general contractor	J. J. Bollinger Construction Co.

Planned, in the words of the hospital consulant, "to render complete service with minimum personnel," this 100-bed hospital serves the 1080 square miles of Comanche County (current population: 60,000+). The 10-acre site is prairie land on the western edge of Lawton, the county seat. Funds for construction were obtained by a county bond issue that covered two-thirds of the estimated sum, and federal assistance provided the remainder. Total cost, including all equipment: $900,000.

The hospital is ideally oriented, facing the prevailing southeastern breezes, and most patients' rooms are aligned along this front. Facilities provide for care of medical, surgical, obstetrical, and pediatric patients. The maternity nursing unit occupies the northeast wing of the first floor; surgical patients are on the second floor; the medical nursing unit, on the third; and a combination of medical and pediatric patients, on the fourth, or top, floor. The three upper floors are identical in plan, though some rooms differ in function.

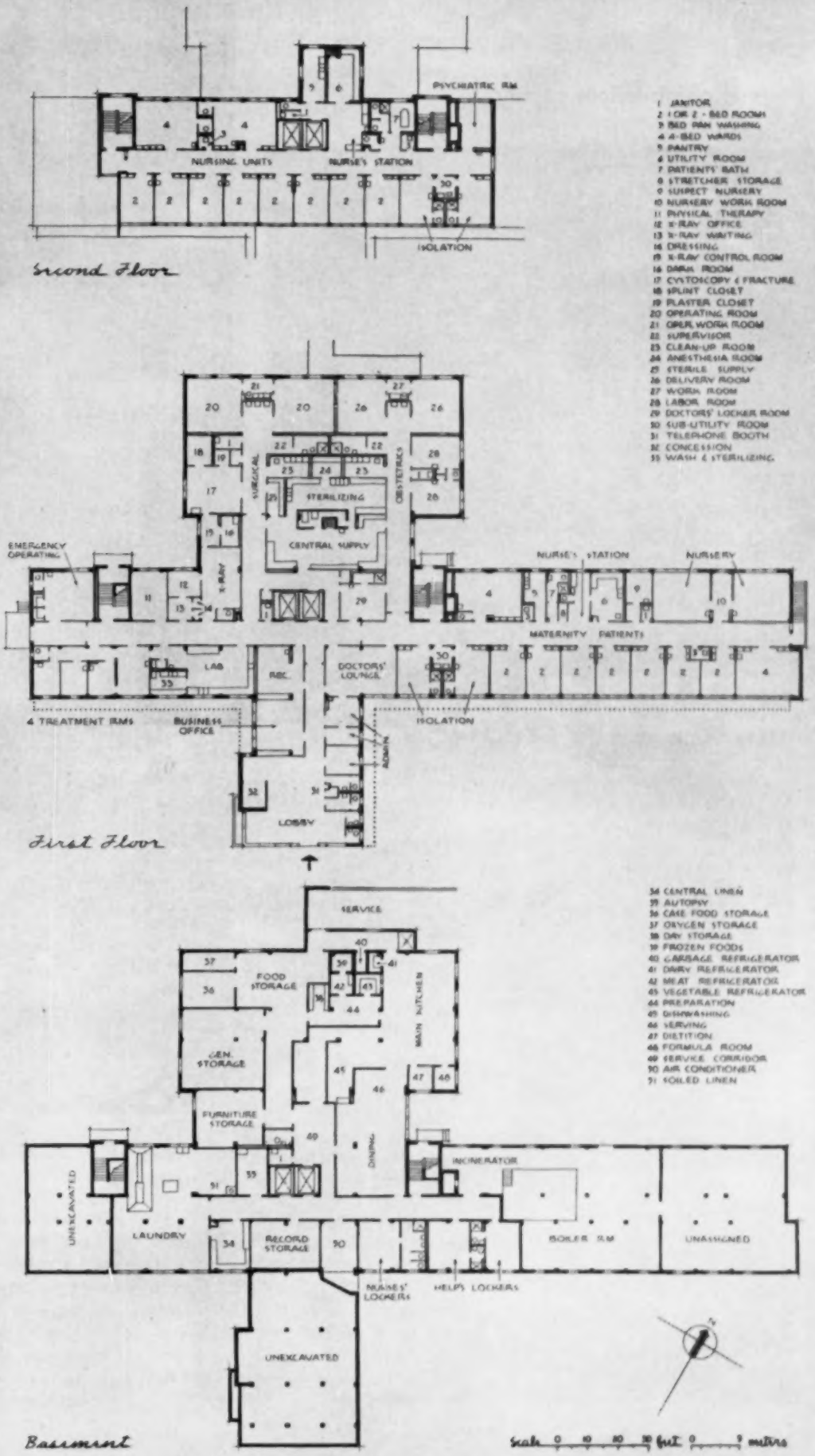
Basis of the planning was the wish to store all medical supplies in one central area and to provide simple and direct distribution to those units using them. From this central area (on the first floor) supplies go up by electrically operated dumbwaiter directly to the utility rooms of each nursing unit. All other supplies reach the nursing floors by a double-access elevator, the rear door of which allows supplies to be delivered to the floor pantries, utility rooms, or nurses' stations without interfering with traffic or causing disturbance in the corridors.

The arrangement of the surgical and obstetrical suites, at either side of the first-floor central-sterilizing room, eliminates the need for separate substerilizing and supply rooms, as cleanup rooms for the two suites have pass windows that open directly to the central sterilizing room.

The laundry is planned for continuous flow of linen. Soiled linen chutes into the dirty-linen section, where it is sorted to go into the laundry and thence into the clean section, which also serves as the housekeeper's headquarters.

Main highways and truck lines in the area make it possible to reach the hospital directly from all sections, without passing through Lawton. The circumferential driveway (model photo, left) *provides easy access to all major areas of the hospital. The public parking area (left of photo) is balanced at the other side by staff parking space.*

Photos: Julius Shulman


PSYCHIATRIC RM
NURSING UNITS
NURSE'S STATION
ISOLATION
Second Floor
1 JANITOR
2 1 OR 2 - BED ROOM
3 BED PAN WASHING
4 4-BED WARDS
5 PANTRY
6 UTILITY ROOM
7 PATIENTS' BATH
8 STRETCHER STORAGE
9 SUSPECT NURSERY
10 NURSERY WORK ROOM
11 PHYSICAL THERAPY
12 X-RAY OFFICE
13 X-RAY WAITING
16 DRESSING
17 X-RAY CONTROL ROOM
18 DARK ROOM
19 CYSTOSCOPY & FRACTURE
20 SPLINT CLOSET
21 PLASTER CLOSET
22 OPERATING ROOM
23 OPER. WORK ROOM
24 SUPERVISOR
25 CLEAN-UP ROOM
26 ANESTHESIA ROOM
27 STERILE SUPPLY
28 DELIVERY ROOM
29 WORK ROOM
30 LABOR ROOM
31 DOCTORS' LOCKER ROOM
32 SUB-UTILITY ROOM
33 TELEPHONE BOOTH
35 CONCESSION
55 WASH & STERILIZING
SURGICAL
OBSTETRICS
STERILIZING
CENTRAL SUPPLY
X-RAY
EMERGENCY OPERATING
NURSE'S STATION
NURSERY
MATERNITY PATIENTS
LAB
REC.
DOCTORS' LOUNGE
4 TREATMENT RMS
BUSINESS OFFICE
ADMIN
ISOLATION
LOBBY
First Floor
34 CENTRAL LINEN
39 AUTOPSY
36 CASE FOOD STORAGE
37 OXYGEN STORAGE
38 DRY STORAGE
39 FROZEN FOODS
40 GARBAGE REFRIGERATOR
41 DAIRY REFRIGERATOR
42 MEAT REFRIGERATOR
43 VEGETABLE REFRIGERATOR
44 PREPARATION
45 DISHWASHING
46 SERVING
47 DIETITION
48 FORMULA ROOM
49 SERVICE CORRIDOR
50 AIR CONDITIONER
51 SOILED LINEN
SERVICE
FOOD STORAGE
GEN. STORAGE
FURNITURE STORAGE
MAIN KITCHEN
DINING
INCINERATOR
UNEXCAVATED
LAUNDRY
RECORD STORAGE
BOILER RM
UNASSIGNED
MAINES' LOCKERS
HELPS' LOCKERS
UNEXCAVATED
Basement
Scale 0 10 20 30 feet 0 5 meters

The main entrance to the hospital, like the majority of patients' rooms, faces southeast. The building is on the highest point of the 10-acre prairie site.

The windowed main lobby (above) *provides comfortable waiting space for visitors; the counter (extreme right of photo) opens through to the business office.*

The doctors' lounge (right) *occurs on the first floor, toward the rear of the entrance corridor.*

The hospital has a reinforced-concrete frame and flat-slab concrete floors and roof. Exterior walls are of brick and tile (hollow-wall construction) or of concrete. Partitions are 2″ solid plaster. Board-type insulation is used on roof slabs, while 4″ glass-wool batts occur above furred ceilings. The windows are made up of architectural projected steel sash, cast-stone sills, and marble stools; double glazing used in operating and delivery rooms.

Floor finishes include terrazzo (operating and delivery suites, X-ray, cystoscopy, emergency operating); quarry tile (kitchen areas); concrete (storage rooms, laundry and boiler rooms); rubber tile (pantries, utility, toilet, and other service rooms); and asphalt tile (elsewhere).

On the ground floor, most walls are finished with glazed tile. Ceramic-tile wainscots with plaster above is the wall surfacing in corridors, delivery and operating suites, treatment rooms, toilet and

Walls of the operating rooms have ceramic-tile wainscots and terrazzo floors.

In the central sterilizing and supply storage area (right), *the walls are plaster, and floors are of rubber tile.*

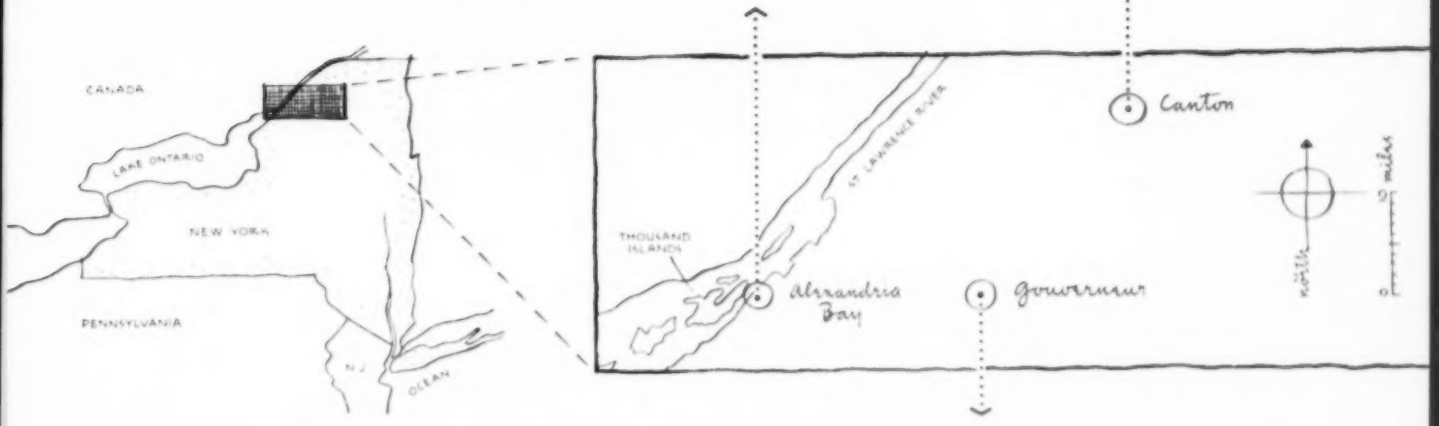
locker rooms, pantries, janitor's closets, and utility rooms—while plaster is used for all other rooms. Ceilings are of acoustical plaster in all areas except toilets and storage and basement rooms, where plain plaster is used.

The hospital is heated by a hot-water radiant system, employing wrought-iron pipe embedded in the floor slabs. In addition, the north and south wings and the nurseries have year-round air conditioning.

Typical patients' accommodations (above) *include a four-bed ward and a private bedroom —large enough for a second bed when this is desirable.*

Each nurse's station (right) *is centrally located; doors at the rear open into the floor pantry and clean utility room. In this rear area, all supplies come to the floor (by either dumbwaiter or elevator) entirely separated from corridor traffic.*

hospital construction: rural

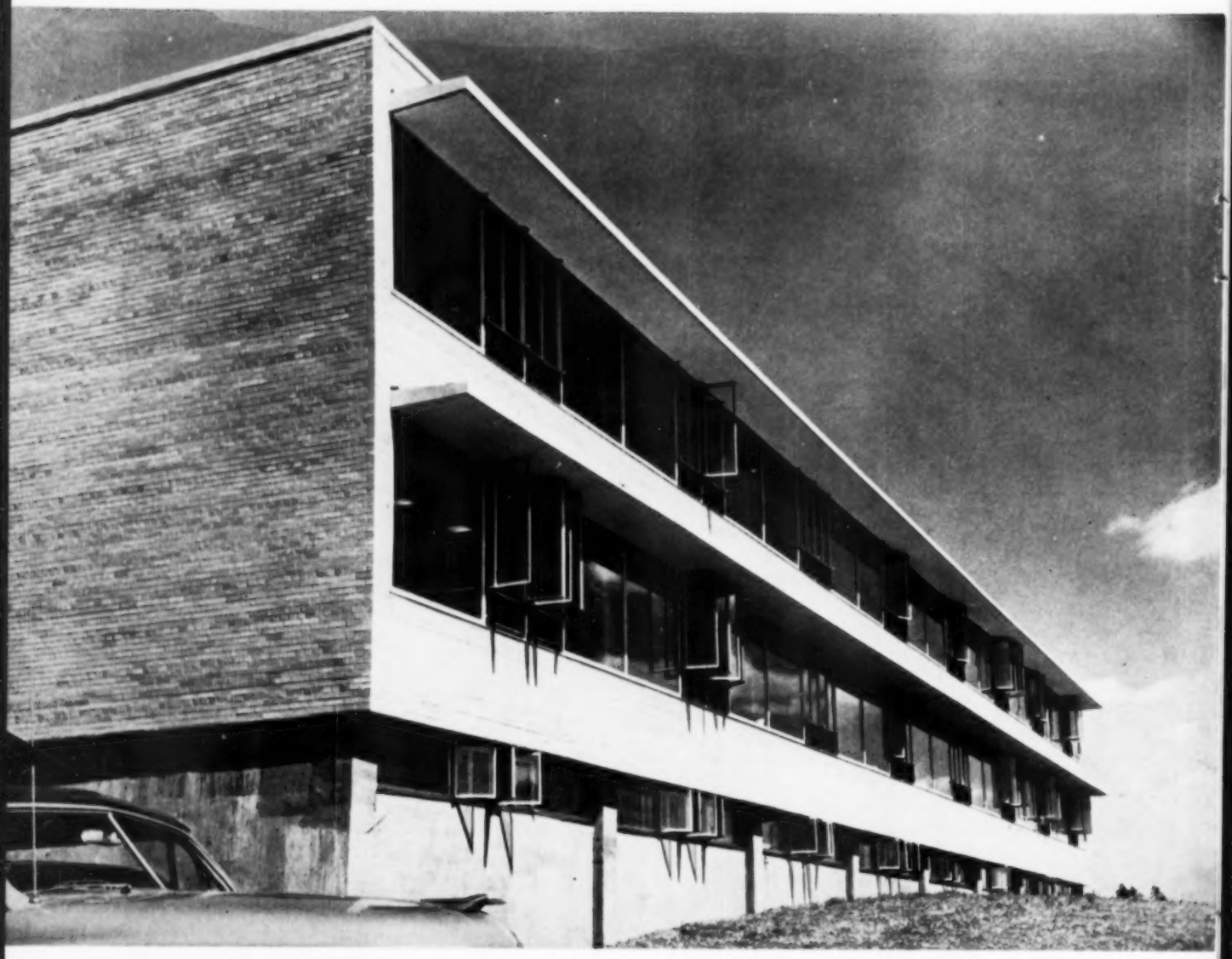


These three small hospitals in upstate New York—Canton, Alexandria Bay, and Gouverneur, west of the Adirondacks, in the St. Lawrence River Valley—are unique in many ways. Not only are they excellent hospitals in themselves, but (located approximately 30 miles apart in towns of less than 5000 residents each) they constitute a single, health-care facility, sharing a top administrator, central purchasing, laundry, etc. Collectively these "North Country Hospitals" have 142 beds and serve a 50,000 population area.

Bringing to the rural area metropolitan standards of hospital service, they were made possible through the generosity of a Greenwich, Connecticut, businessman, Edward John Noble, a native of Gouverneur, who donated one-third of the $1,940,000 cost. The other two-thirds derived equally from the Federal Government through the Hill-Burton Act and from contributions of the people in the region.

Photos of Canton: S. C. Valastro
Other Photos: Torkel Korling

three integrated facilities



Canton, New York

Newest of the three integrated hospitals, the one at Canton offers 51 beds and serves not only its immediate community but also as the infirmary for St. Lawrence University, which is also in Canton. In addition, it contains the community's pathological laboratories.

While each of the hospitals has its own governing board, there is a superior board whose membership consists of representatives from each of the individual boards. The integrated plan includes exchange of doctors and specialists, as demand requires. Each hospital, however, has its own independent staff to handle routine care.

A conscious effort was made to standardize elements, to effect economies in construction and also reduce maintenance costs. Hence, construction of all three is very similar. All have foundations of reinforced concrete; steel frames; and walls of light-gray face brick on cinder-block backup. Both floor and roof systems are composed of concrete slabs on open-web steel bar joists. All sash are steel, intermediate, projected type, glazed with double insulating glazing. Interior wall surfaces are either of plaster on masonry or glazed, ceramic tile. Ceilings are finished with plaster or acoustic tile, and roofs are of built-up tar and gravel. For thermal control, there is a 2-in. layer of fiberboard underneath the roofing.

Oil-fired boilers serve two-pipe modulating steam-heating systems equipped with outdoor electric zone control, with individual radiator controls provided in the operating and nursery rooms. Operating and delivery rooms and nurseries also have pneumatically controlled air-conditioning units.

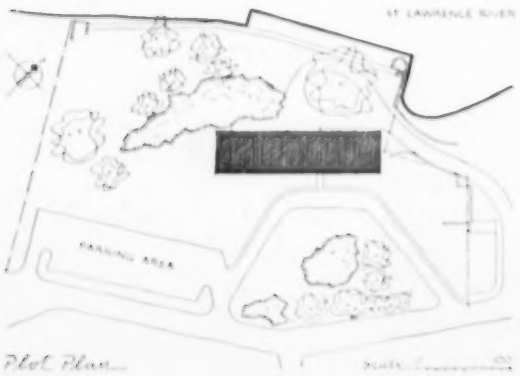
architects	Skidmore, Owings & Merrill
partner-in-charge	Robert W. Cutler
associate architects	Sargent, Webster, Crenshaw & Folley
consulting mechanical engineer	Harry H. Bond
general contractors	A. Friederich & Sons

1 1 bed room
2 2 bed room
3 janitor
4 4 bed ward
5 patients' bath
6 doctors' locker room
7 clean up room
8 nurses' locker room
9 sterilizing
10 scrub up
11 treatment room
12 pantry
13 utility room
14 psychiatric
15 emergency
16 viewing room
17 doctors' lounge
18 drugs
19 formula room
20 labor room
21 doctor
22 canteen
23 examination

The main entrance to the hospital (above) faces due north. Most patients' rooms are lighted by continuous window strips along the south side of the building (left and across page). Unusual is the plan scheme of delivery room and operating room on separate floors, immediately adjacent to the pertinent nursing units. Notice that there is no laundry in the building, as laundry for all three hospitals is handled at the central unit in Gouverneur.

Alexandria Bay, New York

architects	Skidmore, Owings & Merrill
partner-in-charge	Robert W. Cutler
associate architects	Sargent, Webster, Crenshaw & Folley
consulting mechanical engineer	Harry H. Bond
general contractors	Deline, Charlebois & Wager Bros.



Plot Plan

A magnificent site—a beautiful slope overlooking the St. Lawrence River and the Thousand Islands—was selected for this smallest of the North Country Hospitals, a facility with but 29 beds. Like the Canton hospital, the Alexandria Bay unit is complete, with the exception of a laundry, as laundry for all three facilities is handled in the Gouverneur hospital.

Built on solid granite on the site of the old Thousand Islands House, the structure takes advantage of the slope to provide two above-grade floors on the view or northwest side. Most patients' rooms occur on this front, on the upper floor. While hardly the ideal orientation for patients' rooms, all concerned felt that the therapeutic and psychological benefits that would derive from enjoyment of the eye-filling view more than outweighed the consideration of having south exposure. Continuous windows make the most of the outlook. In the south corner is a patients' lounge, with a terrace adjoining.

On the lower floor, on the view side, are the daylighted kitchen, dining room, laboratory, sterile supply, and other work areas. In the underground, rear portion of this floor, artificial light and ventilation serve storage spaces, boiler room, pharmacy, radiology suite, and emergency and operating rooms.

An interesting detail of the structural-steel frame is the use of lally columns within the partitions so that perfectly smooth wall surfaces result. The building is heated by a low-pressure steam system; electric units serve the sterilizers and kitchen equipment. Otherwise, construction of the Alexandria Bay hospital is almost identical with that of the Canton hospital.

1 1-bed room
2 2-bed room
3 janitor
4 4-bed ward
5 pediatrics
6 psychiatric
7 linen
8 patients' bath
9 utility
10 pantry
11 records
12 nursery
13 examination
14 premature
15 formula
16 clean-up
17 sterilizing
18 volunteers
19 women's locker room
20 men's locker room
21 refrigerator
22 files
23 dark room
24 drugs
25 machine room
26 transformer
27 doctors
28 director

Both the one-story, southeast front, and the two-story side facing the river are lined with continuous windows, made up of alternating fixed and operable units.

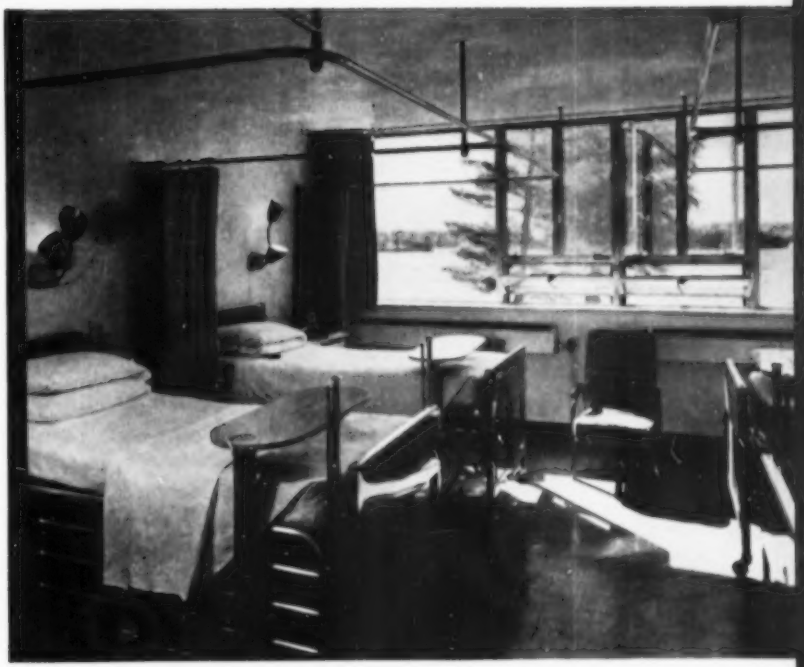
Photos: Torkel Korling

Alexandria Bay, New York

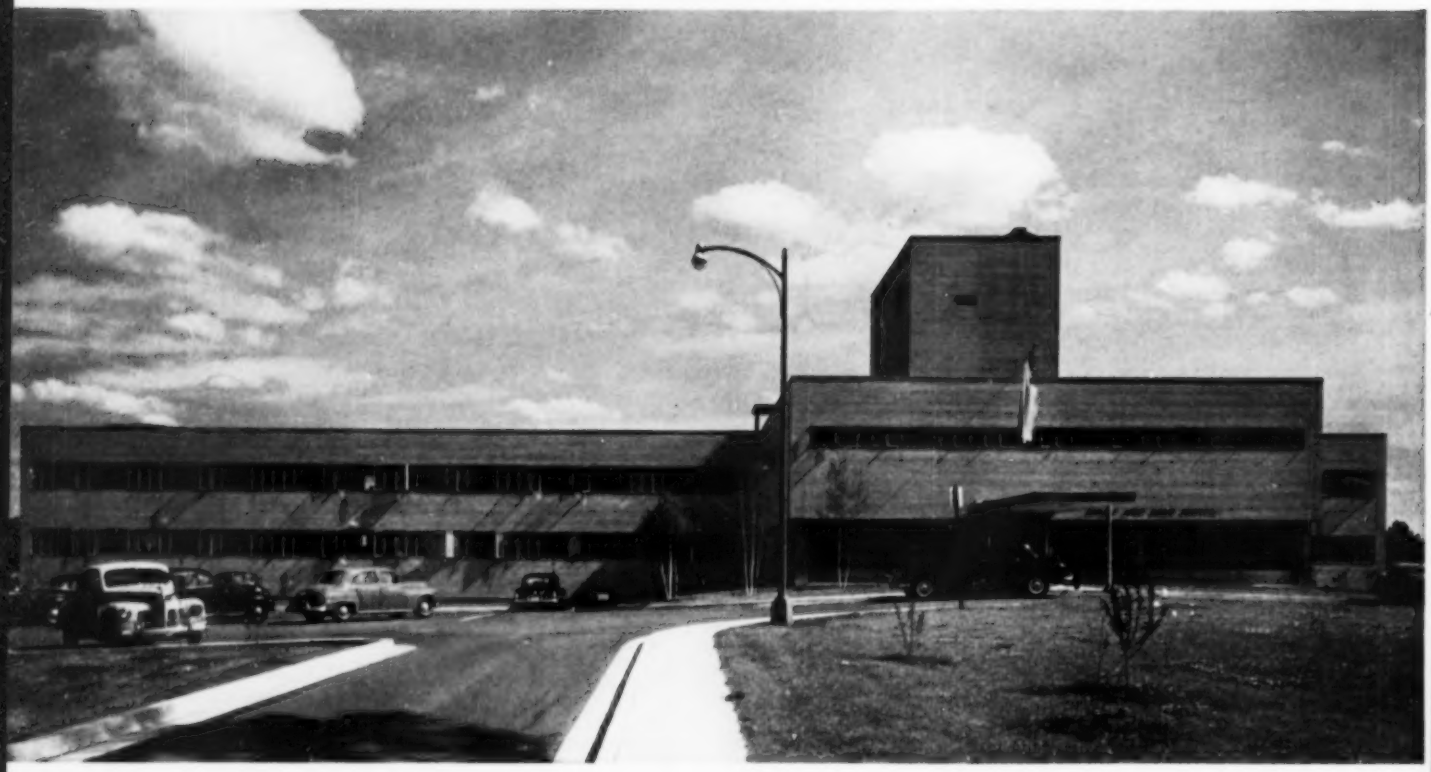
The entrance and waiting room (top) *occur on the southeast wall of the upper floor.*

In the upper-floor corridor (right) *a large, fixed window on the left-hand wall permits a clear view of the nursery.*

A sun-flooded lounge for patients (below) *is located in the south corner of the main floor.*



In addition to the nursery and a room for a psychiatric patient, there are seven single-bed rooms (top); *three 2-bed rooms* (photo above, at right); *and three 4-bed wards* (right). *All except two of the 2-bed rooms command the river and island view.*



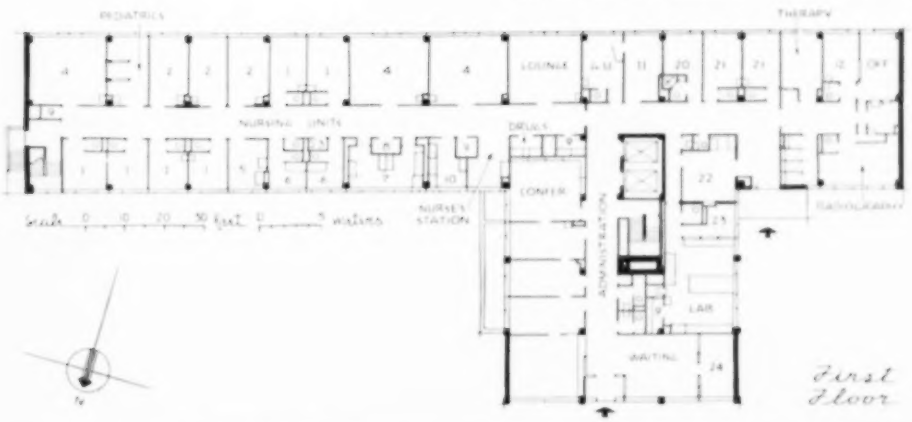
Gouverneur, New York

architects	Skidmore, Owings & Merrill
partner-in-charge	Robert W. Cutler
associate architects	Sargent, Webster, Crenshaw & Folley
consulting mechanical engineer	Harry H. Bond
general contractor	House-Putnam

This 92-bed, "headquarters" hospital faces north; most patients' rooms are on the south, where they enjoy a view of the Oswegatchie River. Off the U-shape approach drive is ample parking space; a secondary drive (acrosspage) leads around and down to the garage at the west end of the ground floor.

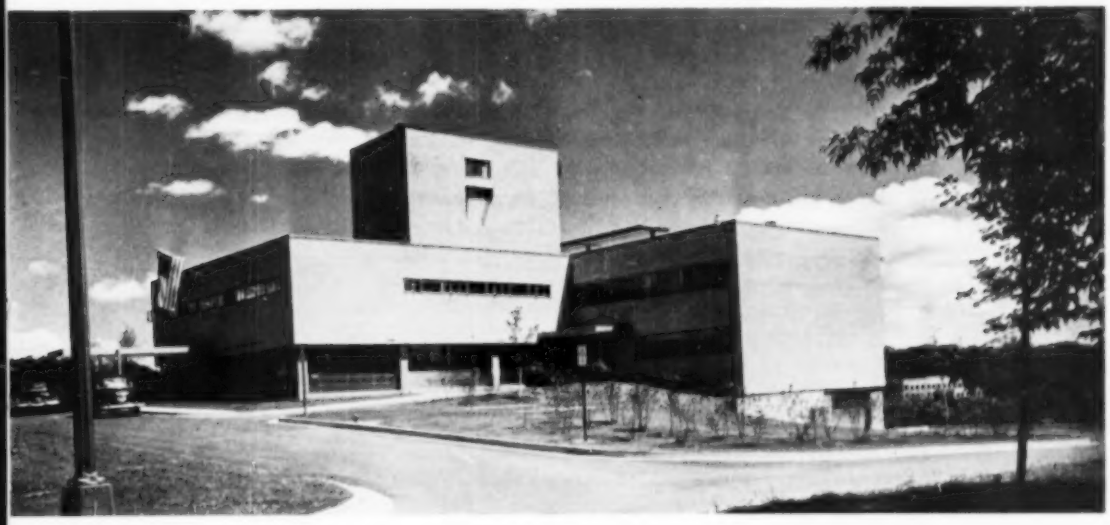
Photos: Torkel Korling

Second Floor



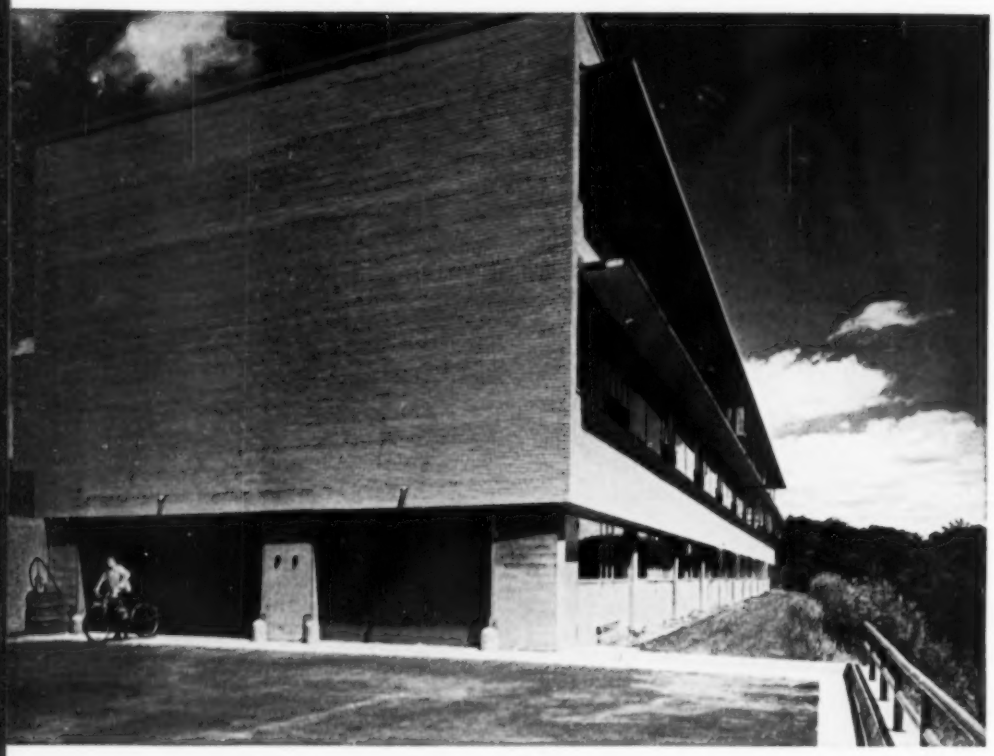
First Floor

1 1 bed room
2 2 bed room
3 janitor
4 4 bed room
5 treatment
6 patients' bath
7 utility room
8 linen room
9 storage room
10 pantry
11 x-ray
12 examination
13 premature
14 nurses
15 doctors
16 scrub-up
17 sterilizing
18 clean-up
19 formula room
20 interne
21 doctor
22 emergency
23 pathology
24 canteen



1 serving area
2 dining
3 refrigerator
4 autopsy
5 clean linen
6 soiled linen
7 housekeeper
8 janitor
9 freezer
10 oxygen storage
11 receiving
12 sterilizer
13 stand by power plant
14 incinerator

Ground Floor

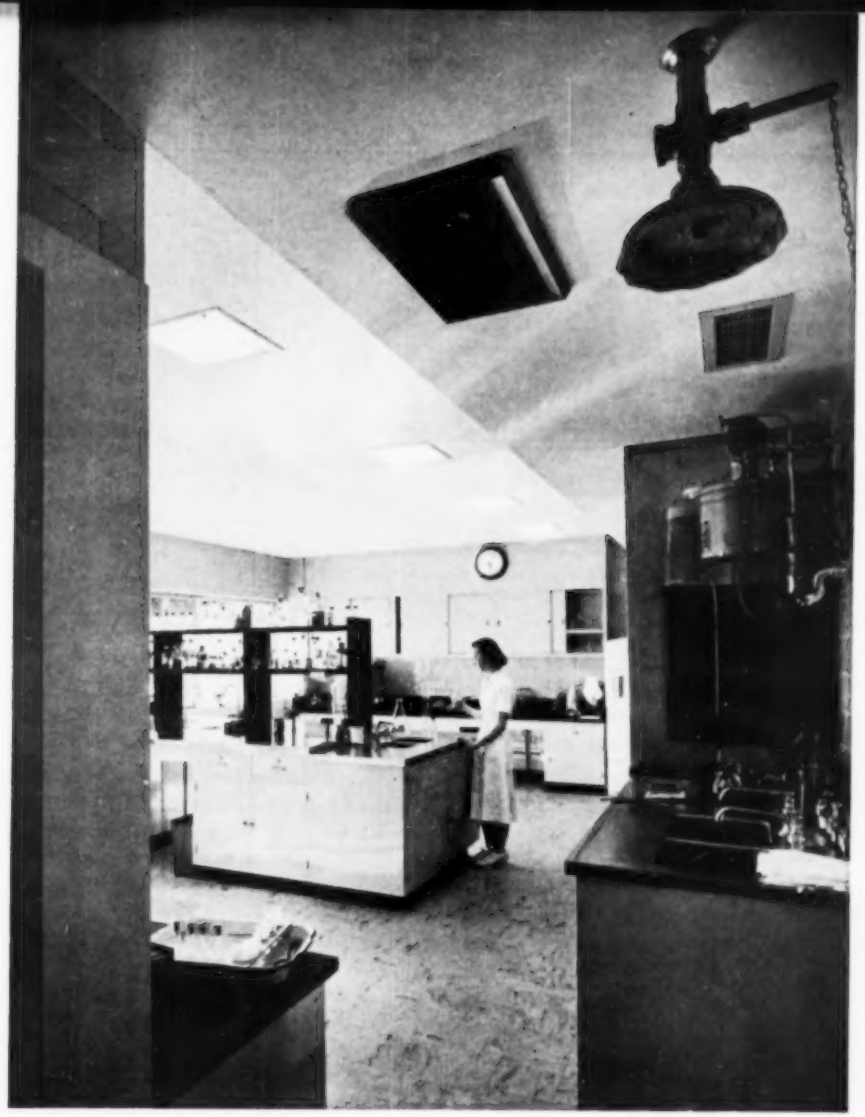


Gouverneur, New York

The largest of the three Edward John Noble hospitals, Gouverneur has 92 beds and is so constructed and equipped that another nursing unit may be added on the roof, to form an eventual 100-bed facility. It is at Gouverneur that the centralized elements of the North Country Hospitals are located—the top medical direction and administrative activities; the central laundry; and bulk storage facilities that supply the other units. The unusually sizable radiographic department works with the local talc, zinc, lead, and iron-mining and milling industries to research the related occupational hazards.

The lordly site is a promontory 85 feet above the Oswegatchie River, and the majority of patients' bedrooms face south, overlooking a bend in the river. On the ground floor (the north half of which is below grade) are the boiler room, receiving and storage rooms, kitchen, dining rooms, laundry, autopsy room, and garage. On the first floor, in addition to administrative offices, there is the out-patient department, including diagnostic facilities of radiology and pathology, doctors' offices, and a 24-bed medical nursing unit. Here also is the radiographic department that co-operates with local industries. The second floor contains the operating and delivery rooms, surgical and obstetrical nursing units, and nurseries.

Like the other two hospitals of the group, the Gouverneur unit is steel framed with exterior walls of light-gray face brick over cinder block. The continuous, insulated-glass windows on the south front have structural cantilevered strips above them, so designed that they exclude unwanted summer sunlight but will admit winter sunlight. The elevators are duplex, collective, completely automatic, and operate as a team. The operating and delivery rooms and nurseries are fully air conditioned.



The west end of the nursing-unit wing (across page) *is devoid of openings, except for the garage doors on the ground floor; continuous, structural eyebrows shade the southern window bands.*

The hospital laboratory (top, left) *is located in the forward wing of the hospital, on the first floor.*

Glazed ceramic-tile surfaces walls of the fully equipped operating suite (bottom); *floor is terrazzo.*

heating design for future cooling

by Robert H. Emerick*

When a client tells his architect "please design my new home for *future* summer cooling," the problems created can be more than strictly technical. They can involve, for example, the question of extra fees.

To illustrate, an engineer is quite likely to point out that allowing for summer cooling at some future date obliges him to compute the summer load, to locate the ultimate plant, at least tentatively, and to particularize his specification beyond the normal requirements for heating alone. He might even feel compelled to make rough sketches of his dual-purpose design in order to verify the accuracy of the pattern.

Usually his first reaction in such circumstances is to ask who will pay for the extra engineering. As this question is disturbing to all concerned, the writer has developed a method for determining the summer load with sufficient accuracy to meet all initial design requirements, and yet avoid the expense of a detailed engineering analysis. To see the procedure in action, we must tabulate first the factors that shape a cooling design. They are:

(1) Sensible heat that enters the building through the walls, roof, windows, etc.

(2) Solar heat, impinging on the structure, with perhaps some direct rays entering certain rooms through the window glass.

(3) Sensible heat emitted by the room occupants. Each human being releases approximately 180 Btu per hour when seated and at rest.

(4) Latent heat from the room occupants, with an approximate value of 100 Btu per person per hour. This heat is present in the form of water vapor, rejected in exhaling, and as moisture evaporated from the skin.

(5) Sensible heat from lights.

Sensible Heat Through Structure

In order to achieve an estimate of summer cooling, we must develop approximate values for each of these factors and in the details of normal calculating this is a very lengthy procedure. Our short cut method starts with the sensible heat that enters the building. Happily, this answer is easy to come by since the building cooling load bears a direct relationship to the heating load. Both of these loads are calculated with the same set of heat-transmission coefficients so that only the temperature difference between winter and summer conditions sets the results apart. Thus, with a computed heating load already in hand, we need merely pick up a slide rule and with two settings of the runner, determine the sensible heat gain through the structure. The formula is:

$$S = \frac{W \times td_s}{td_w}$$

S = Summer sensible heat load by transmission, Btu/hr

W = Winter sensible heat load by transmission, Btu/hr

td_w = Temperature difference winter, degrees F

td_s = Temperature difference summer, degrees F

To illustrate, assume we have a living room that shows a heating load of 20,000 Btu per hour when calculated on a temperature differential of 0 F — 74 F. Then the summer cooling for a temperature difference of 80 F — 95 F will be $\frac{20{,}000 \times 15}{74}$ or 4054 Btu per hour.

This transmission load is merely the first factor but it provides us with a basis on which to erect values for the solar, fresh air, and latent heat loads, each of which is computed by a system of ratios which are themselves subject to variations in the light of particular conditions.

Solar Load

The first ratio concerns the solar load. Sunlight calculations are always generously leavened with judgment, even if we endeavor to reach a scientific value based on latitude, sky reflections, solar angles, etc. This must be so because a single cloud at the critical hour, or the fall of a tree in a storm, or the carelessness of a maid in failing to wash windows has the power to invalidate these scientific estimates, not merely for one season, but again and again. Consequently, an analysis of many relationships between the solar load and the building transmission load indicates to this writer the reasonableness of assuming the solar load to be 1¼ times the transmission value, provided this fraction is used as the *basis for further consideration.*

* *Consulting Mechanical Engineer, North Charleston, S. C.*

Determination of Total Cooling Load

Room	Heating Btu/hr	Cooling bldg. factor td_s/td_r Btu/hr	Human load Btu/hr	Solar* load Btu/hr	Lighting load Btu/hr	Total load Btu/hr
Living	20,000	4054	2160	5068	——	11,282
Dining	10,000	2027	1440	2534	——	6,001
Bed. #1	7,000	1419	360	1419	——	3,198
Kitchen	12,000	2433	360	2433	500†	5,726
Bath. #1	1,500	304	180	380	——	864
Bath. #2	1,500	304	180	——	200	684
Bed. #2	5,500	1115	180	——	200	1,495
						29,250

* Solar load has been sized on the 1¼ fraction or on the 100 percent basis to demonstrate application of the principle.

† The kitchen load for lighting should be expanded to include the load from cooking appliances.

Note: Total air circulated = 29,250 x 0.0585 = 1711 cfm.

By further consideration is meant the common sense readiness to increase the fraction if the room being weighed is heavily exposed to the sun, and conversely, to decrease it in cases of extensive shading. The range suggested is 5 percent for minimum exposures and up to 175 percent for maximum exposures.

The Human Load

For the sensible and latent factors of the human load some understanding of the kind of people who will occupy this house will be our best guide. For example, suppose there are sociable people and they are likely to enjoy afternoon bridge or evening canasta. We therefore study the dimensions of the living room and assume it will accommodate X number of card tables. If we then allow four persons to each table, we can approximate the number of individuals who will produce 180 Btu per hour each of sensible heat. The total, of course, becomes the expected human load for that room. We do the same thing for the bedrooms, allowing one or two persons in the room as the living habits of the family suggest to be likely.

The latent heat created by these people will not affect duct design which is the outstanding structural problem when allowing for future cooling, but it must be included when sizing the machinery. How this is done will be discussed in the later paragraphs on the sizing determinations for the cooling compressors. Meanwhile, we can safely neglect it.

Lighting Loads

Our final factor, the burden which night lighting places on the cooling system, need only be considered in those rooms which do not receive sunlight. The reason is that even a small hourly solar impress tends to approximate, and often exceeds, the output of Btu from the night lighting system. In addition, as further compensation for the evening, the building transmission load usually falls steadily after sunset. Our cooling design peak, therefore, is likely to occur in the late afternoon, and we should include those lights which might be turned on at that time, perhaps in heavily-shaded rooms.

assembling a useful answer

Since the basic responsibility in the problem was to design a winter heating system and we have the Btu for such a system room by room, the cooling burden is quickly determined if we follow the table (*top of page*), filling it in as appropriate.

While we now have a dependable approximation of the cooling load, room by room, the answer we really need for sizing the ducts is the cubic feet of air per minute. This determination, in a detailed engineering analysis, involves the use of psychrometric charts and careful recirculation calculations but for our present purpose, the procedure requires but a few moments and a slide rule. The steps are these:

(1) We assume a temperature differential between the air leaving the cooler and the air in the cooled room. Experience has shown 16 degrees to be a good average (64 F and 80 F in this case), although some designers have used 20 degrees without complaint.

(2) We multiply the temperature difference by 0.24, which is the specific heat of air, and observe that each pound of the cooler discharge will pick up 16 x 0.24, or 3.84 Btu.

(3) One other item is needed, in this example the volume of air at 64 F, and the standard tables show its value to be 13.47 cubic feet per pound.

(4) All the data are now set down in an equation designed to produce the desired information in cubic feet of cooling air per minute. The solution is achieved with a few moves on the slide rule. Here is the way it works out with the living room figures:

$$\frac{11{,}282\ (\text{Btu/hr}) \times 13.47\ (\text{cu ft/lb})}{3.84\ (\text{Btu/lb}) \times 60\ (\text{min/hr})} = 660\ \text{cu ft/min}$$

These steps have been demonstrated in some detail in order to make clear the reasons for doing what we do. In practice, we actually shorten the procedure by developing a multiplying factor which is applied directly to the cooling load for each room. This factor is simply the solution of the foregoing equation *except for the room load in Btu per hour.* In this case it would be: $\frac{13.47}{3.84 \times 60} = 0.0585$; and, 11,282 x 0.0585 = 660 cfm (living room); 6001 x 0.0585 = 351 cfm (dining room); 3198 x 0.0585 = 187 cfm (bedroom #1). Each room is considered in the same fashion.

Arriving at a useful answer, therefore, requires us to complete two journeys by slide rule. The first, starting from the winter heater load, ends with the determination of the summer cooling load. By means of the second, we convert the summer cooling load to cubic feet of air per minute. The time to complete both journeys should not take an engineer longer than a single hour.

sizing the ducts

The importance of knowing the volume of cooling air that a room requires lies in the fact that more air is needed for cooling than for heating. If we size a duct for cooling, therefore, we can expect it to accommodate warming air most satisfactorily but we cannot speak so confidently of the results when this design basis is reversed.

The preponderance of air on the cooling cycle is made necessary for the comparatively small number of Btu picked up by each pound of the cooler discharge. In the example discussed these totaled 3.84, whereas heating air with an assumed register discharge of 150 F bears 150 F − 74 F x 0.24 = 18.24 Btu.

At 150 F a pound of dry air occupies 15.37 cubic feet and if we substitute this volume, together with the Btu value in the simplified formula, the multiplier comes out to:

$$\frac{15.37}{18.24 \times 60} = 0.0145 \text{ (approximately)}.$$

Applying this multiplier against the living room winter load of 20,000 Btu per hour produces a calculated air movement of 290 cfm. Since this is less than half the requirements for the summer cycle, the controlling effect of the cooling operation is obvious.

Our cooling calculations, therefore, will be the figures to be used for duct design when making allowance for summer cooling and the specifications and drawings will present these facts to the contractor. In order to hold down costs, summer velocities may be set at the top acceptable limit; on the heating cycle the oversize of the heating ducts will then be less marked.

size of the cooling machinery

The architect who has provided a heater room in his plan always hopes that the summer-cooling plant can be squeezed into the same space. One possibility is to use a suspended type of horizontal heater, then when the future becomes the present and the owner is prepared to install his cooling compressor, the floor space beneath the heater is available. As an alternative, the suspended heater might be mounted under the roof in the carport, garage, or in the attic above the house proper. Any of these alternatives will increase the cost of the duct system and complicate the arrangement.

The size of the cooling plant is not the simple summation of the cooling loads as we have already observed them. Fresh-air make-up, which may be established at any desired volume but usually is projected from 10 to 15 percent of the total air circulated, introduces a substantial load, both sensible and latent. Compensating to some extent is the factor of diversity, which means that the maximum load is not the same for all areas of the house simultaneously.

To observe the relative effect of the fresh-air intake on the size of the plant, suppose we assume a 10 percent make-up based on the total air circulated to the seven rooms already indentified on the load chart. This means 10 percent of 1711 cubic feet per minute—approximately 171 cfm.

Converting into pounds, we have 171 ÷ 13.47 (the volume of air at 64 F) or 12.69 pounds per minute. These 12.69 pounds are brought in from the outside and their temperature, of course, is not 64 F but 95 F. Chilling them down these 31 degrees imposes a load on the cooling machine of 31 x 0.24, or 7.44 Btu per minute per pound. Thus, in one hour the sensible load alone is 5664 Btu.

The moisture in this incoming air is what imposes the major latent heat load on the machine for most residential installations, rather than the exhalations of the occupants. In this case, with an outdoor temperature of 95 F and 53 percent relative humidity (80 F wet bulb), a condition frequently encountered in many sections of the country, the lowering of the air's temperature to 64 F in the cooler squeezes out approximately 42 grains of water vapor from each pound. This figure is obtained from the psychrometric chart.

Since we are bringing in 12.69 pounds of fresh air each minute, at the end of an hour's operation $\frac{12.69 \times 42 \times 60}{7000 \text{ (grs/lb of water)}}$ equals about 4.57 pounds of water removed from the incoming fresh air in the cooler. While in the vapor state, this water represents an investment in heat of approximately 4570 Btu, since 1000 Btu are incorporated in the evaporation of one pound of water and all of these Btu must be spent in the cooler.

At this point we will consider the humidity created by the persons present in the house. Twelve bridge players, breathing water vapor into the air at a rate of about 700 grains of moisture per hour each, are producing a burden on the cooling machinery of 1200 Btu per hour, more or less, depending on the excitement of the game. Tabulating the fresh air and latent heat situation, all of which affects the sizing of the cooling machinery but not the room distributing system, we have:

(1) Fresh air sensible heat removed in cooler.....	5664 Btu
(2) Fresh air latent heat removed in cooler.....	4570 "
(3) Human latent heat removed in cooler.....	1200 "
Total	11,434 Btu

If we now add the 29,250 Btu per hour for the other cooling items previously calculated, the future allowance in machinery for this particular case totals 40,684 Btu per hour, or 3.4 tons of refrigeration.

This is the maximum gross load but it is not likely to occur because of the influence of diversity. Incidentally, to obtain the greatest advantage through diversity operating, a rather complete system of controls is needed and the average residence lacks this benefit. Therefore, a diversity allowance factor of no less than 90 percent is recommended by this writer as a general safety rule, since any more optimistic allowance might result in an undersized installation.

sizing by short cuts

Humidity calculations along the psychrometric highways involve considerable time; consequently, doing them is not pleasing to an engineer who sees no extra pay for his work. However, there does exist a by-way to the same end, its foundation secure on what we already know, and it is very easy and quick to follow. Here it is:

Step 1: X number of persons x 100 Btu/hr = Total human latent heat

Step 2: Total human latent heat x 4 = Latent heat in fresh air

Step 3: Building transmission load x percent fresh air x t_1/t_2 = Fresh air sensible heat

Step 4: Add 1, 2, & 3 to building transmission load = Gross machinery load

Step 5: Gross machinery load x diversity = Net machinery load. This is the proper size.

Most of these steps are obvious but some explanation of 2 and 3 is in order. First, there is an indirect relationship between the number of persons in a building and the volume of fresh air needed. As in the case of the solar conclusions, analysis of numerous jobs suggests that a 4 to 1 ratio is a good average starting point. Individual practitioners referring to their own experiences may desire to change it, either up or down.

The fresh air sensible heat load is developed by means of a direct ratio between the *outside* temperature-to-cooler differential and the *inside* temperature-to-cooler differential. Thus t_1 is, in this case, 31 degrees and t_2 is 16 degrees; $t_1/t_2 = 1.94$ approximately. Knowing the total inside sensible load as we do, multiplying by the 10 percent of outside air and then by the temperature differential ratio becomes a clear road to the outside load's value.

Translating these ideas into a working demonstration of the short cut produces the following results:

Step 1: 12 persons x 100 Btu/hr = 1200 Btu/hr

Step 2: 1200 x 4 = 4800 Btu/hr

Step 3: 29,250 x .10 x 2 (approx.) = 5850 Btu/hr

Step 4: 29,250 + Steps 1, 2, and 3 = 41,100 Btu/hr

Step 5: 41,100 x .90 diversity = 36,990 Btu/hr

Tonnage = 3.09 tons of refrigeration

Residential refrigeration machines are fairly well standardized at 2, 3, and 5 tons (or horsepower); consequently in this case we would recommend a 3-ton machine. For in-between sizes, judgment must be exercised with particular care being taken not to undersize. A wise memory is one that tells us to consider the reduction in capacity that follows the appearance of algae and scale in the condensing system and reminds us that machinery efficiency naturally decreases with time.

space for the physical installation

With the size of the cooling machinery determined, space must be found in which to station it. In a normal arrangement, the heater is set at one side of the heater room, thereby leaving space for the cabinet cooler. Unfortunately, this does not solve the whole problem. Condensing equipment remains to be accommodated somewhere. A cooling tower on the roof is not an admirable sight and if we set it on the ground instead, neighborhood children will delight in throwing toys, stones, and pet rabbits into its watery cascades.

The alternative is to place it in the heater room with duct connections for circulating the outside air which serves it. But, is there space for this rain-closet, which is more than 5 ft high, and occupies a floor area of about 2 ft by 2 ft? If not, the architect faces an irritating problem. Possibly the house plans are drawn before the request to provide for future cooling comes in and thus, revisions of the design can be quite costly.

For self-protection, architects should make a point of discussing possible future cooling with their clients at the very beginning of a project. Waiting for the client to bring up the subject is a mistake.

Occasionally, local water supplies are plentiful and cheap and in those circumstances the client might be willing to condense the refrigerant vapor with water that runs thereafter to waste. Space requirements are benefited by the omission of the evaporative condenser but these instances are the exception. Incidentally, a 3-ton machine will use about 5 gallons of condensing water, more or less, every minute it operates and this quantity can create municipal problems. To illustrate, some communities will not permit the cooling water to be discharged into the house sewer because of the extra burden this water places on the sewage-disposal plant. From the supply standpoint, areas contending with critical water shortages or overloaded distribution systems are almost certain to deny water from their lines to air-conditioning condensers.

the register situation

In one-story houses, conventional practice locates the warm-air registers high in the wall. This location needs no change for summer cooling as the point of cold-air discharge is properly high above the floor.

With multistory buildings, the best positions for the warm and cold registers are in conflict. Due to the building's stack effect, which is a way of acknowledging the nature of warm air to rise, heating registers produce best results when set in baseboards, or nearly that low. However, cold blasts emerging from these same low registers and impinging on the ankles of

the building occupants will be appreciated by no one. The treatment of this situation is to go up with the cold-air registers, to extend the wall stacks to high wall positions, or alternatively to carry the ducts to ceiling diffusers.

Under some conditions, ceiling diffusers may prove satisfactory for both cold- and warm-air service but the design of the diffuser is critical and a mischoice produces alternate cold or hot blasts, depending on the season of the year.

Allowing for summer cooling, therefore, means providing extended wall stacks or rearranging ducts to serve ceiling outlets at the time the heating system is installed, even if these extra lengths of duct and extra registers will not be used for years, perhaps never. The engineer will benefit a little by the extra construction cost if his fee is based on a percentage of the job and he will not, therefore, grumble very persistently about it.

future cooling and wet heat

If the new house is to be heated by either steam or forced-circulation hot water, we have two basic alternatives to consider for future summer cooling allowances.

First of these is the obvious scheme of employing two entirely unrelated systems. The heating system is simply a conventional layout of steam or hot-water convectors and the summer cooling is an equally conventional design of forced-circulation chilled air, distributed through ducts.

This arrangement of two unrelated systems is perhaps suggested most often by the client because this is the way he sees it. As for the engineer, he is in exactly the same position he would occupy if the heating were to be accomplished by warm air. On the basis of his heating load, he applies the short cuts that develop for him the duct dimensions and the equipment sizes and he reports to the architect whether there is sufficient space for everything in the heater room. There is even some additional cost of installation for the ducts, bringing a modest increase to the design fee.

The second alternative, unfortunately, is one over which our short cuts have no power. In this scheme, each room enjoys a special type of conditioner cabinet, wherein piping elements are supplied with hot water during the winter, and cold water during the summer. Behind the elements is a fan, so that air circulation through the cabinet and over the elements is positive, and each cabinet is connected to the outdoors for fresh-air intake as desired.

Since all the piping must be installed to supply heating water, there is nothing to postpone for future cooling except the cooling machinery itself which chills the water for summer circulation, plus a fairly complex arrangement of three-way valves with their automatic controls. A system of this kind requires complete designing from the start and both the architect and the engineer are entitled to request the entire fee, whether the summer equipment goes into the new building now or never.

This system is intended primarily for hotels and apartment houses and is rarely justified for anything smaller, at least for the present.

summing up

The client who asks for a heating system that allows for future cooling is taking cognizance of a trend. By means of the short-cut methods described, the designing engineer can determine, at a negligible cost to himself, the size of the ducts for the cooling cycle and the size of the cooling machinery.

The figures so developed are not exact but for the purpose intended they are well within practical tolerances. To enjoy the maximum of accuracy for any given job and location, users of these short-cut methods should modify the ratios and basic values to meet their own experienced estimates for the solar exposure, fresh air make-up, persons present, and so on.

The normal time-labor investment, from start to satisfactory answer, is less than two man hours.

"The windowless concrete box of the university library is covered with a continuous mural that leaves not a square inch of the building material free to breathe its own texture."
Photos: Saul Molini

Mexican Critique

by Sibyl Moholy-Nagy

The much-publicized Ciudad Universitaria complex in Mexico City teaches many lessons. Most of all, it refutes the myth that photography is a true record of three-dimensional reality. The important factors deciding the character of a building development—site, light, and scale—go unrecorded in two-dimensional reproductions. Of the three, it is the site that is most unlike the impressions derived from published pictures. The mountain range surrounding the wide, flat plateau of Mexico City on all sides is of such height and modulations that it seems to ridicule man-made verticality. In these peaks and volcanoes there are both sheltering and menacing qualities that might have influenced the horizontal emphasis of traditional Mexican buildings. The skyscraper dimensions of some of the University City buildings jar the eye that has become accustomed to the vertical-horizontal rhythm of landscape and structure; and it seems justified to ask: "Why build high on unlimited grounds, when horizontal forms and horizontal communication seem to correspond both to tradition and practical needs? Must the unhappy example of Pittsburgh's Cathedral of Learning, with its chocked elevators and jammed stairs, be repeated?"

The second surprise unhinted by the photographic record is the effect of light. The plateau of Mexico has an altitude of 7400 feet. Even

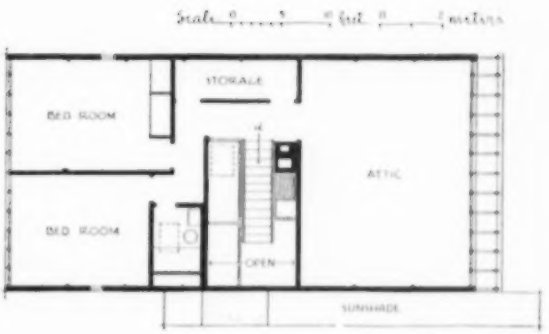
(Continued on page 170)

". . . an unrelated mass of high and low, long and short, vaulted and flat forms . . . the backdrop seems to ridicule man-made verticality."
Photo: Compañia Mexicana Aerofoto

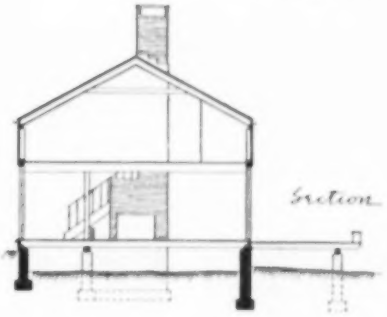
house

location	Marion, Massachusetts
architect	Hugh Stubbins, Jr.

First Floor



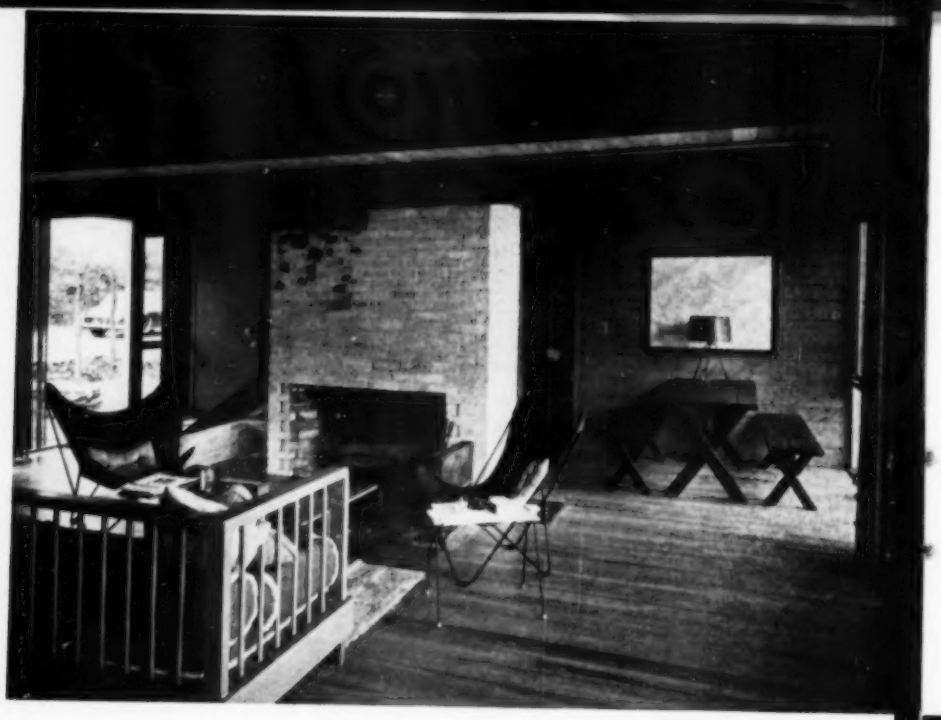
Second Floor



Section

Regionalism and traditionalism, in the best sense of those words, imply a contemporary use of forms that have developed for good economic and social reasons, and have therefore become rooted in the tradition of the region. The New England "story-and-a-half" house is such an architectural form. Its high eave line, raised enough to gain a usable second floor, accounts for much of the beauty of many old New England houses—and barns.

In this house on Buzzard's Bay, Hugh Stubbins has translated the form into a 20th Century expression. The device is simple: the top of the eaves plate is raised 3'-8" above the second floor line (just high enough to use a divan along the outside wall) and the gable ends are opened. The result is an entire floor gained, at very low cubic and square foot cost—33% lower, the architect says, than any other house his office has done since 1948. Plans and section (*above*) show how this works. Stubbins knows the advantages and limitations of the scheme; he had been playing with it for some years, before carrying it out in this house. The length is limited, he points out, because upper-floor rooms get their light and ventilation from gable ends. (An intermediate dormer would complicate construction; baths and halls have simple "push-up" skylights.) The house sits on a point of land sloping to a rocky beach, toward which the east side opens. Gable ends, protected by a sun device, get good views to south and north (*photos on facing page*). As the west approach view shows (*above*), the plot is protected from adjoining properties by trees.



The house, now a summer cottage but planned for future year-round use, is based on a simple plan concept. The entrance is screened from living room by the fireplace; and from it an open stair leads to second-floor spaces (right). *The living room itself flows into the dining area* (top) *and opens both to the Bay toward the east, and to a screened garden toward the west* (left, above).

Photos: Gottscho-Schleisner

Structural posts, on a six-foot module, are two 2" x 6"'s, separated by a 1" x 4" tongue which carries to roof plate for stiffness. Exteriors are silver-gray, weathered siding; interior wood walls and ceilings, as in living room walls pictured (above), are white or gray stained and waxed.

Wood deck-terrace forms transition between house and sandy beach. Exposed structural beams and columns are stained black, to minimize imperfections and contrast with muted walls and more colorful furniture and plants. In kitchen (below) other colors are used.

new curriculum: new structure

program for Albert Einstein College of Medicine

by Harry M. Zimmerman, M.D., Director
Abraham White, Ph.D., Associate Director
Joseph Blumenkranz, Consulting Architect to the University

A new medical school has a unique opportunity to benefit from past experience and present practice in medical education, both in its curriculum and in the structure that houses that curriculum. The Albert Einstein College of Medicine, in New York City, is planned to take advantage of such opportunities.

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The site is in the Borough of the Bronx, adjacent to two new city hospitals—a general hospital and a tuberculosis hospital—which will serve as clinical teaching center for the college. The site of the college will be developed as a comprehensive medical center, which will ultimately include a dental school, a graduate school, student dormitories, a training school and dormitory for nurses, a university hospital, and a doctor's office building—all to be grouped around the college campus. The college, the first of the buildings scheduled for erection, is planned to be closest (geographically) to the municipal hospitals.

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The functions of the college, allowing it to take full advantage of its opportunities as a well-balanced institution, will be:

1. To impart to students the theoretical and practical knowledge which is essential to the practice of medicine. Training for general medical practice will be stressed.
2. To train investigators and teachers.
3. To contribute to patient care.
4. To provide facilities for the training of paramedical personnel: nurses, social workers, medical technicians.
5. To provide medical teaching and scientific opportunities to the physicians in the area in which it is located, as part of a larger program of post-graduate medical education.
6. To provide lay education in certain fields of medicine.

The above functions will be dependent on the structural organization of the school. This structural organization in turn must necessarily be dependent on the academic philosophy and objectives of the school's program, implemented through its faculty and its curriculum.

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The curriculum will make some departures from traditional practice. The current pattern of medical education has developed over a period of years into a fairly rigid, uniform program followed essentially by most medical schools in the country. The early instruction in the disciplines which comprise the study of medicine has been didactic, and restricted largely to classroom lectures, with or without patient demonstration, supplemented by practical instruction in the laboratory. In the third and fourth years, experience is provided in the study of the patient in the hospital, generally with inadequate reference to the work of the previous two years. The curriculum in general has been characterized by increasing de-emphasis of practical laboratory exercises. Departures from this pattern (some of which are already in practice in a few medical schools) which are planned at the new college, fall into three principal categories:

1. An initial, short, formally scheduled period of instruction will be devoted to orientation in the medical school's curriculum, including subjects of the following nature: Literature and History of Medicine, Human Biology and Behavior, Introduction to Medicine, Medicine in Modern Society. This introductory period of about four weeks, would also initiate the course in Gross Anatomy.

2. The introduction of the student to certain aspects of medical care in the community and the relationships of medical care to society, including:

A community medical apprenticeship. It is proposed that each first-year student be assigned the responsibility—at first to a limited extent—of participating in the community, whether this care is provided in the home or in hospital or school clinics.

Training in a hospital. This will take place during two periods between the first and second, and between the third and fourth years of the curriculum.

Urban community apprenticeship. This assignment of fourth-year students calls for a four-week period of making house calls with a physician.

Group medical practice. This will take the form of seminars and practical experience with voluntary health insurance programs.

Community factors in health and disease. The student will study the impact on health and disease of socio-economic factors, housing, old age, sanitation, industrial hazards, etc.

Instruction in legal medicine.

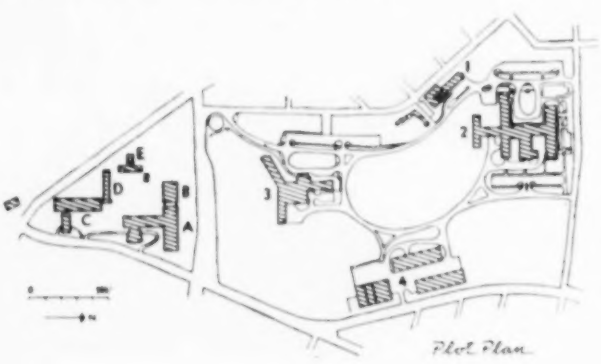
3. Marked emphasis on the integration of the various disciplines of the curriculum:

The basic plan of the College as it was developed meets the demands of this dynamic concept of medical education; and it is planned to accommodate changes which might occur in the as-yet-untried curriculum, and will provide flexibility for unlimited experiments in curriculum.

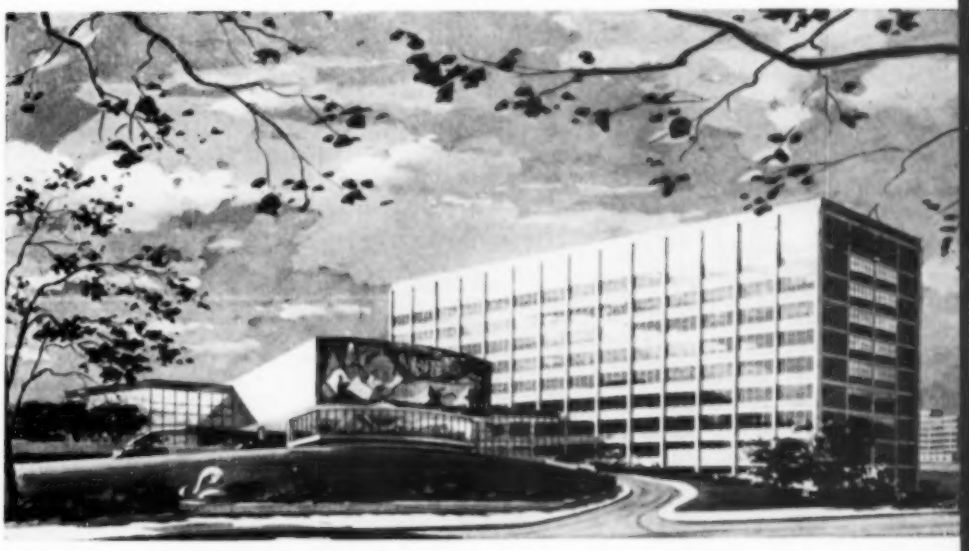
Detailed discussion of the plan concept which resulted from this curriculum, and description of the individual laboratories is continued on page 180.

YESHIVA UNIVERSITY GROUP
A Albert Einstein College of Medicine
B dental school
C hospital
D nurses' residence
E students' dormitories

MUNICIPAL HOSPITAL GROUP
1 staff quarters
2 general hospital
3 t.b. and chronic hospital
4 service buildings



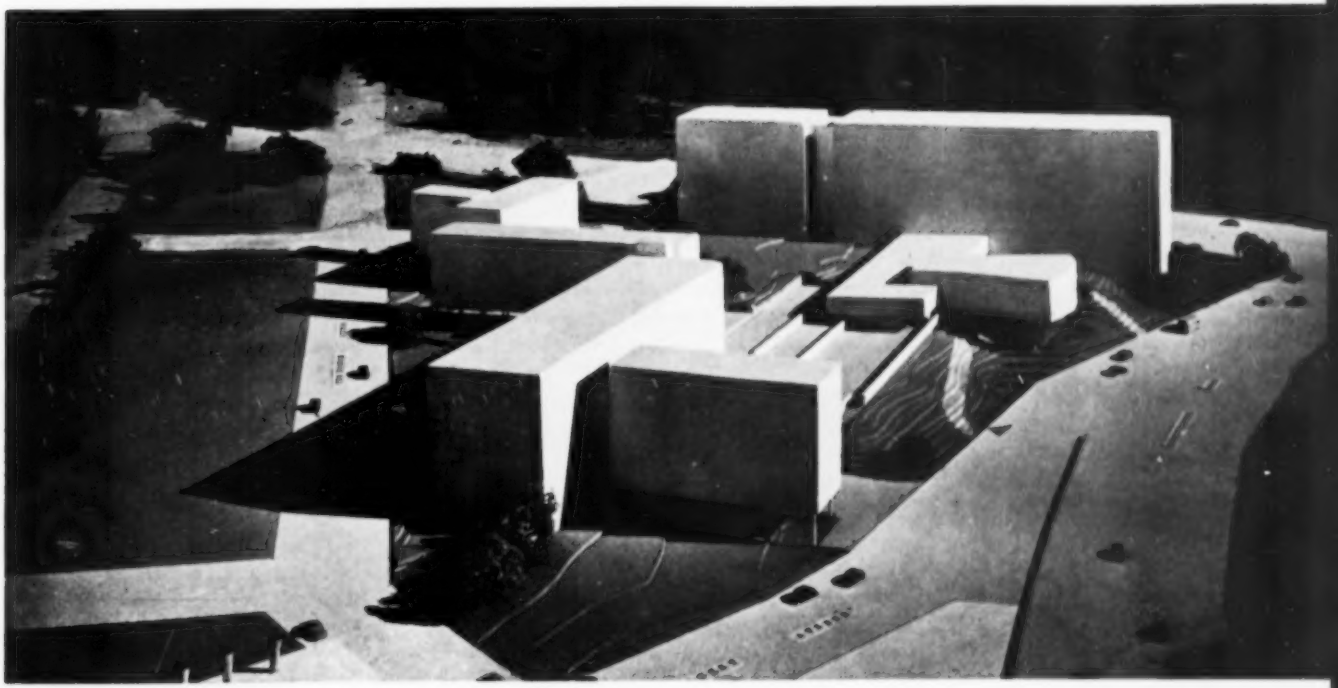
Plot Plan



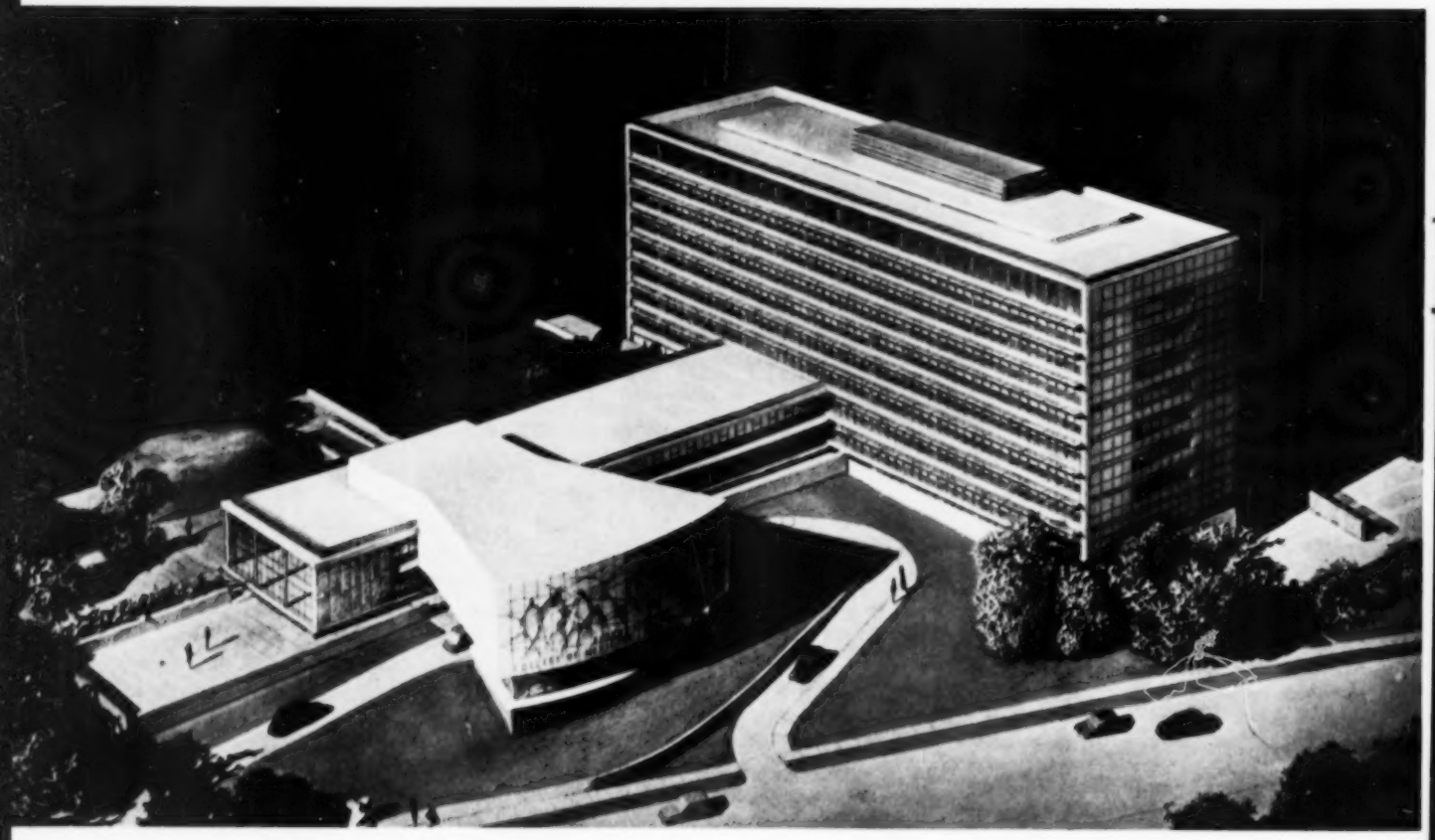
college of medicine

location	Bronx, New York
architects	Kelly & Gruzen
associate-in-charge	Joseph A. Cashdan
mechanical engineers	Jaros Baum & Bolles
structural engineers	Strobel & Salzman

Stages in the design of the Albert Einstein College of Medicine are shown in the block model below (College at the rear; future hospital and boiler plant in the foreground), *and in the early rendering above. Wall system shown here, with columns on the exterior, was abandoned in favor of a continuous aluminum-panel system, with eyebrow sun shades, shown in the model photograph on the next page.*



college of medicine



Named for the world-famous physicist, Albert Einstein College of Medicine, sponsored by Yeshiva University, will soon begin rising in the upper area of the city of New York. It will be the first unit in an ultimate "campus" of medical education buildings, and is a very direct translation of a program worked out by the Planning Board of the College. The structure, shown above in model photographs, consists of a 10-story building which is the school section, and a three-story administration and library wing, from which projects a 750-seat fan-shaped auditorium. The approach to the building at the administration wing, is by means of a driveway passing under the auditorium, which thus acts as a shelter for the unloading cars. An over-all mosaic, 30′ x 100′, will act as a huge mural across the end of the auditorium.

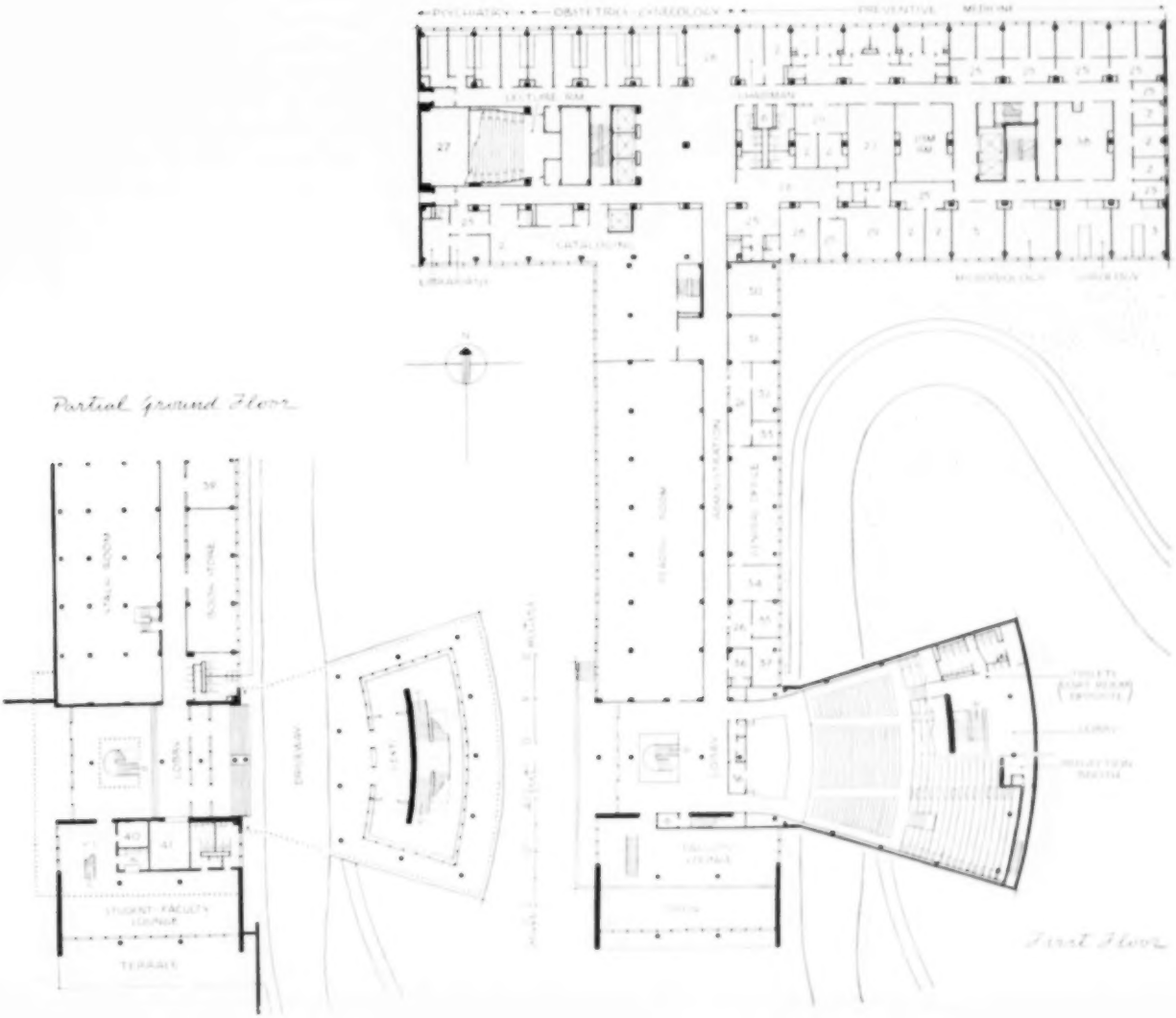
The planning criteria called for a series of individual student laboratories, which enable the students to have a "home" workroom, to which the faculty will come. Traffic will thus be reduced, and the unusual curriculum facilitated. Student laboratories will generally be on the north side of the building; the south side will house research laboratories, instructors' offices, and such spaces.

The principal plan shown on the facing page is the first floor, which contains the auditorium and the main library floor of the projecting wing, and the administrative floor of the school building. The College functions also begin on this floor, with classrooms and laboratories for the departments of psychiatry, obstetrics and gynecology, and preventive medicine. Shown, in part, is the driveway approach entrance at the ground floor, with steps leading to the lower level of the auditorium from a special vestibule outside the building (to the east of the drive approach). The classroom portion of the fourth floor *(top of facing page)* is fairly typical of the third through fifth floors—student laboratory rooms on the north, instructors' and research laboratories on the south. These floor plans are based on a double-corridor system, with the central core of the building restricted to mechanical, storage, and other facilities which do not require daylight. The second floor is devoted primarily to research laboratories; the sixth to dissecting rooms. Animal rooms are on the top floor.

The College is planned to be built with a reinforced-concrete frame. Exterior walls to be of masonry and glass, with a window system of nonferrous metal which, in effect, forms a continuous curtain wall

Fourth Floor

1 office/lab
2 office
3 lab
4 men's locker room
5 women's locker room
6 janitor
7 rest room
8 media room
9 incubator room
10 balance room
11 stock room
12 glass wash sterilizing
13 sterile room
14 autoclaves
15 dark room
16 special instruments
17 isotope counting
18 cold room
19 mycology
20 parasitologist office/lab
21 virologist office/lab
22 seminar
23 serologist office/lab
24 biochemist office/lab
25 secretary
26 waiting room
27 upper part audio visual studio
28 assoc. director
29 director of medicine
30 director of chemistry
31 registrar
32 records
33 mimeograph room
34 bookkeeper
35 bursar
36 lecturers' room
37 purchasing
38 demonstration room
39 canteen
40 coat room
41 switch board



Partial Ground Floor

First Floor

center-core cantilever construction

by Henry H. Werner*

By allowing the walls enclosing a central service core to carry the entire weight of a building, a method of cantilever construction has been developed which will provide better useable floor space in multistory office buildings than is now afforded by conventional methods. These core walls can be constructed of reinforced concrete by the same slipform process commonly used in the erection of grain silos and other bulk-storage facilities. Although these walls may be slightly less than 12 in. thick, a 12 in. thickness provides adequate shelter areas for protection from atomic blasts. It is this thickness that the Atomic Energy Commission recommends as the minimum for structures located a half mile from a possible blast.

Within the main walls of a center core would be situated elevator shafts, stairwells, other vertical service ducts, rest rooms, file rooms, and possibly a mechanical garage *(Figure 1)*. The top cantilever construction is supported by the walls of this center core and cables from the ends of the cantilevered steel trusses support the edges of the floor slabs *(Figure 4)*.

In a typical layout, the ground floor would be an area for free development with direct access to escalators and elevators while the second and, possibly, third floors would be suitable for large shopping areas due to the cantilevered floor extensions and the few slender cable supports *(Figures 2 and 3)*. (Every second cable from above is omitted in these floors.) In a building constructed by this method, no columns would obstruct the area of the typical floor since the cables disappear in the mullions. Thus, it is possible to obtain a much more fluid arrangement of offices and equipment *(Figure 1)*. On all floors the file rooms, stairwells, and rest rooms are arranged and interconnected to form shelter areas.

In general, a center-core cantilevered building will have ample strength and stability even at a height of 15 stories. In the eventuality of an atomic blast nearby, the outer shell and even part of the cantilever construction could crumple without impairing the core. Footing and basement construction are conventional with the added advantage of a center concentration of the main footing. Erected on the core slab at the second floor, a tongue-and-grooved long-grain slipform would be approximately four ft high for typical walls and extend horizontally in one continuous form. As the form is jacked up on vertical bars imbedded in the lower concrete, concrete and reinforcing are added continuously while space for doors, floor joists, ducts, etc., are boxed out as the form is raised. Erected and anchored on the core and spaced about 10 ft apart, the cantilevered steel trusses (±9 tons each) have an approximate depth of 9 ft (one-third that of the 27 ft cantilever). Having supporting lugs for each floor, high-strength plough steel cables with ±2 in. diameters and an allowable unit stress of 100,000 psi are attached to the trusses. At this stage construction is ready to proceed from the roof downward—the form and its working platform underneath are lowered directly from floor to floor, suspended on the main as well as some auxiliary cables.

Although slipform walls are not new they are used most widely in the field of bulk storage construction and certain conditions brought about by the use of the slipform method should be observed.

(1) In this type of construction, the top cantilever would be a rather stiff truss with any anticipated deflection provided for in the cables.

(2) One-sided live load has no appreciable effect on the cantilever or center core.

(3) Cable loads of 200 kips or 70,000 psi and floor connections of up to 30 kips are not unusual when compared with loads carried by cables in suspension bridges.

(4) Cables should be well insulated and

* *Consulting Engineer, Long Island City, New York. The author is also the deviser of this structural schema.*

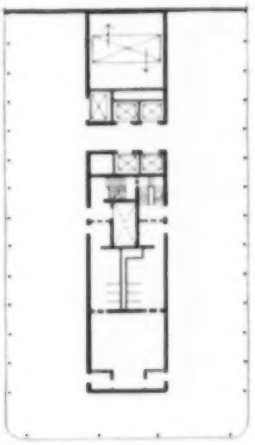
protected against accidental damage—a comparatively simple matter in both cases. Elastic and plastic deformations in the cables or concrete are small and if the cables are warmed electrically during construction, any anticipated changes can be counteracted.

(5) Floor construction should begin from the roof downward and without shoring posts.

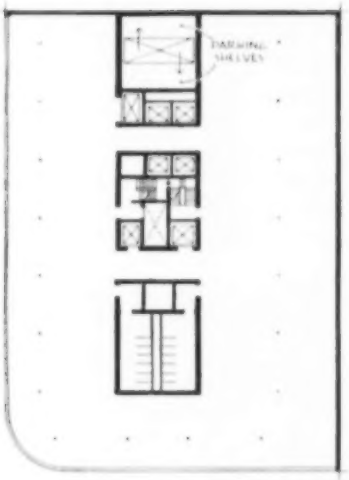
As in the case of all new construction methods, time and money are decisive factors. It takes time to become familiar with and be thoroughly convinced of the merits of any new method and it takes money to solve any difficulties which might arise in the experimental stage. Taking this into consideration, this center-core cantilever method meets the decisive conditions very well. A building can be raised very quickly by sliding the core walls. For example, it would take an estimated time of one week to reach the roof height of a 12-story building (*see perspective*). Furthermore, the use of one set of shallow forms would produce smooth walls at quite a competitive price. The necessary cables fall into this same classification since they are standard items requiring little additional fabrication and have the advantages of easy erection and simple connections. Standard fireproofing and protective shells can be used to cover them. Although the top cantilevers are not the least expensive structural supports, the minimum amount of field work, their simple erection as units, and the repetition and composite action of the steel and concrete in the bottom chord would allow their cost to be within reasonable limits.

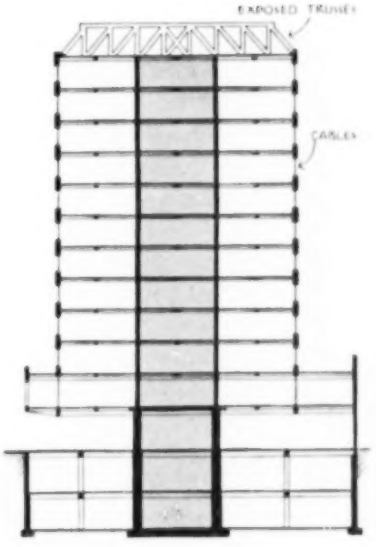
The application of the method which has been described above is not confined to center cores of office buildings. There is an opportunity to use it whenever an open elevation and a great amount of freedom at the ground floor are desired and, at the same time, a number of vertically superimposed walls can be used as the structural support.

1: typical floor

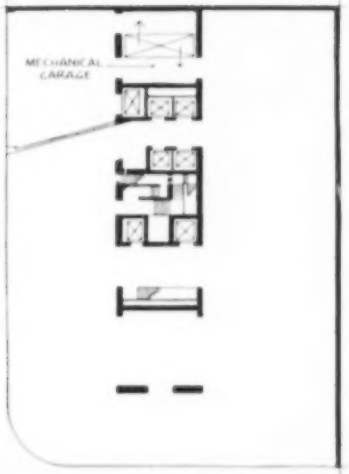


2: second floor





4: cross section



3: first floor

Dimensionally stabilized cellulose-fiber boards have countless applications: wall and ceiling panels, metal-panel backs, bases for plastic overlays, movable partitions, etc. By proper arrangement other manufacturers may use the patented process described in this report.

research report:

DIMENSIONAL STABILIZATION OF

Chemical research has mothered new ways of solving many old problems of the construction industry, and now a new process has come to light to eliminate expansion and contraction, which take place due to atmospheric changes, in wood and other structural materials principally composed of cellulose fiber. Impregnated with selected chemical compounds, these materials can be made dimensionally stable, thereby preventing warping, cracking, delamination, and other damage found under varying moisture conditions.

The process, developed by Dr. W. P. Ericks, Director of Research of the Upson Company, Lockport, New York, entailed an extensive study of the structure and behavior of cellulose fiber. Its primary objective was the selection of chemicals having an affinity for cellulose equal to or greater than that of water.

That cellulose-fiber materials have a strong affinity for water is, of course, well known. Chemically, this affinity is attributed to the hydroxyl groups present both in the cellulose and the water *(Figure 1)*.

Water, when taken in by cellulose, is held chemically by secondary valences of hydroxyl groups in the amorphous, noncrystalline portions of the cellulose-molecule chains *(Figure 2)*. These are located between sections of regularity, called crystalline portions, where the cellulose chains are arranged parallel to each other and, most frequently, parallel to the fiber axis. Inasmuch as water passes and is held primarily in the noncrystalline sections, it pushes apart the sections of regularity, the crystallites, causing the fibers to swell.

In grained materials, swelling of the width of the cellulose fibers can be as much as 10 times that of the length. Where there is random distribution of fibers, the total percent of dimensional change due to variations of humidity is the same in all directions *(Figure 3)*.

To prevent such expansion and contraction, Dr. Ericks reasoned that chemical compounds having two or more hydroxyl groups in each molecule would associate with cellulose and permanently replace water in some sections of the cellulose molecules, thereby fixing their special arrangement. Experimenting, he determined that chemical compounds of a molecular weight less than 6000 and having two or more hydroxyl groups in the molecule chain would produce dimensional stability *(Figure 4)*.

The first group of chemical compounds which were found to be effective as dimensional stabilizers are known as glycol dicarboxylic acid monoesters. Other partial esters of polyhydric alcohols and polycarboxylic acids, as well as the reactants themselves (the polyhydric alcohols and the polycarboxylic acids), were also cap-

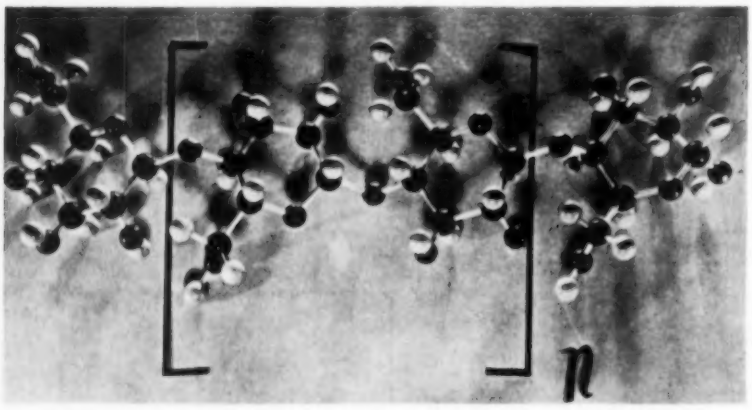
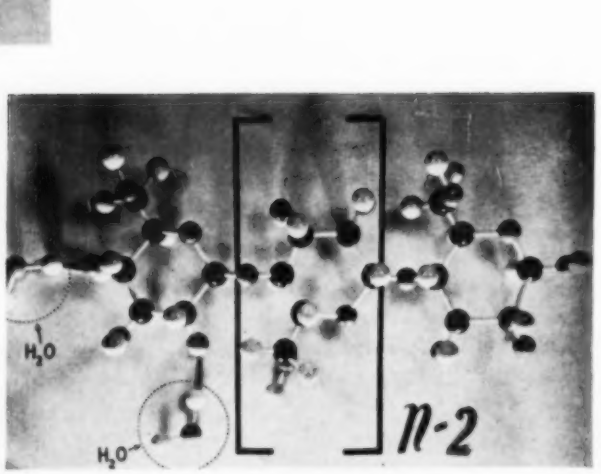


Figure 1—single-molecule chain in cellulose fiber is made up of hexagonal units formed by five carbon atoms and one oxygen atom (above). Each unit contains three hydroxyl groups of one oxygen atom and one hydrogen atom.

Figure 2—cellulose molecule with two molecules of water added (right). Through hydrogen bonding, hydroxyl groups present in both water and cellulose become attached and cause expansion of the cellulose fiber.



CELLULOSE-FIBER MATERIALS

Expansion Tests for Treated and Untreated Newspaper Sheets

Monoester in impregnating solution, percent	Monoester in sheet, percent	Expansion eliminated, percent
40	33	88
20	20	61

able of dimensionally stabilizing cellulose.

While the action of these stabilizers is not fully understood, Dr. Ericks believes they enter into chemical union with the cellulose through formation of hydrogen, ester, and possibly glucosidic bonds *(Figure 5)*.

Certain of the Upson experiments show that expansion and contraction can be completely eliminated through a range of 0-95 percent relative humidity. Others show that they can be reduced by specific amounts.

For example, sheets of unsized newsprint stock, 12″ x 2″ x 0.042″, were thoroughly impregnated with glycol dicarboxylic acid monoester by immersion at room temperature. They were then dried and heated at 130 C for 30 minutes. The sheets were measured accurately when dry and after conditioning at 90 percent relative humidity at 37.8 C. The results, compared with untreated sheets, were as shown *(table above)*.

Generally speaking, the degree of dimensional stability achieved is determined by the type of material treated and the type and quantity of chemical used as the stabilizing agent.

With regard to wood, and wood products, dimensional stability can be accomplished by conventional methods of impregnation. The simplest methods comprise either spraying or immersion; the stabilizer can thus be introduced into the fibers from which board is made, into the individual plies of a laminated product, or with much greater difficulty into the final laminated assembly itself.

Pressure or heat are not required in the process except where it may be necessary to increase the rate of solvent composition or the speed and depth of penetration. The material can then be suspended in a chamber, subjected to vacuum, exhaust gases, and other volatile materials. Flooding the chamber with the stabilizing compound, the pressure can be raised moderately. The solvent contained in the compound can later be removed by drying.

A thorough fixation of the stabilizing compounds can be produced by using them in combination with thermosetting resins. After curing, these resins are believed to cover and protect the compound from attack by solvents. They also increase the hardness and water resistance of the impregnated material. The amount of thermosetting resin used, however, may be varied between 5 and 50 percent of the resin in the final product, depending upon the properties desired.

Making cellulose-fiber materials dimensionally stable by the Upson process does not appreciably alter their appearance. The desirable properties of low density and good acoustical and insulating qualities can be retained to a great degree.

Figure 3—measured with- and across-grain, cellulose fiber board expands as relative humidity increases (graph below). *Curves are imperceptible when board is impregnated with new dimensional stabilizer.*

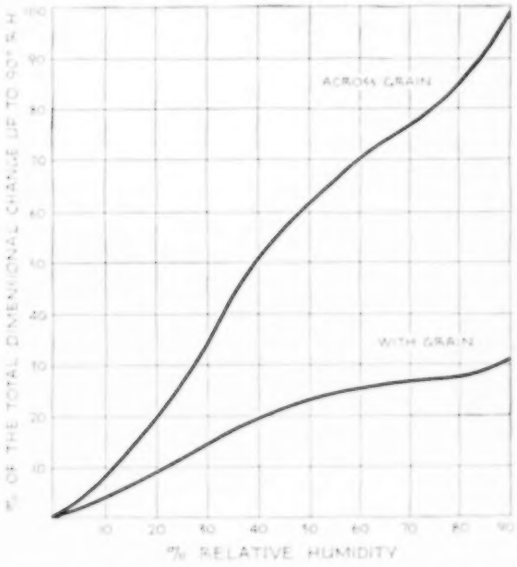
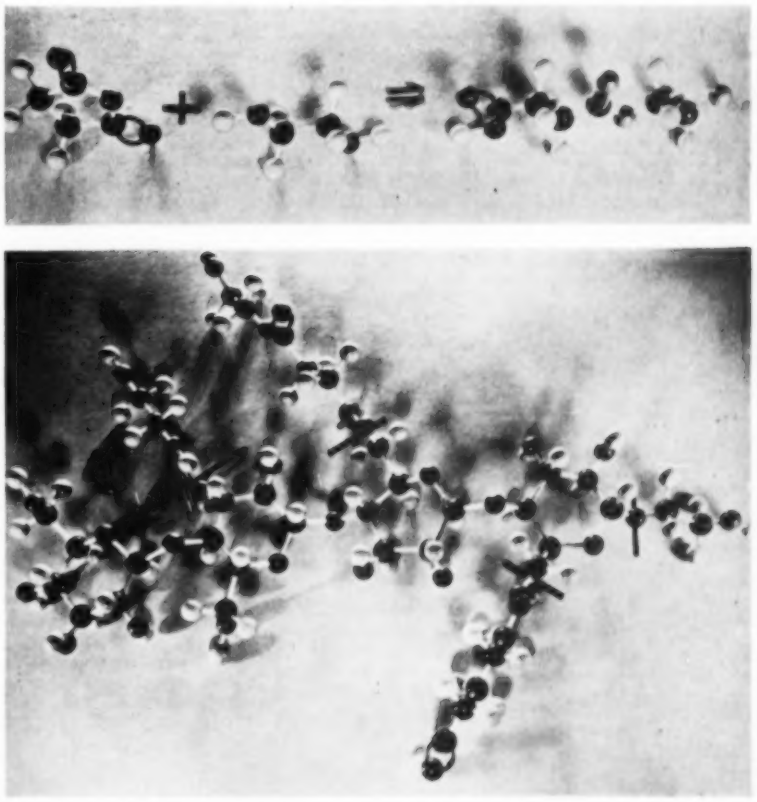
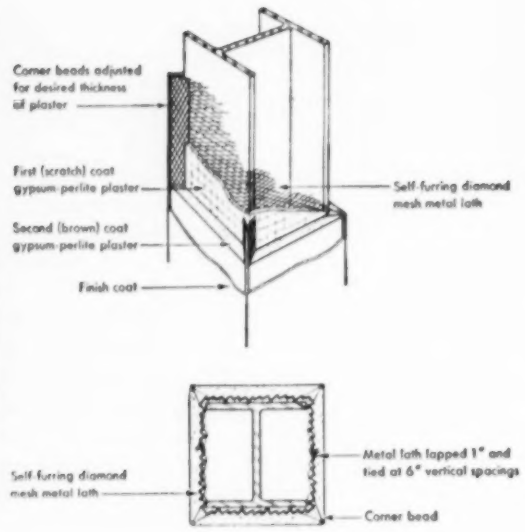


Figure 4—ethylene glycol succinic acid monoester, one of the chemical compounds which has required hydroxyl groups and allowable molecular weight (above right).

Figure 5—compound is chemically joined to cellulose molecule by hydrogen, ester, and possibly glucosidic bonds (right).

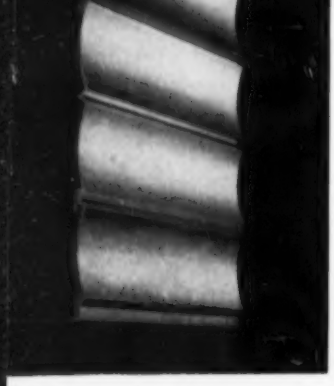


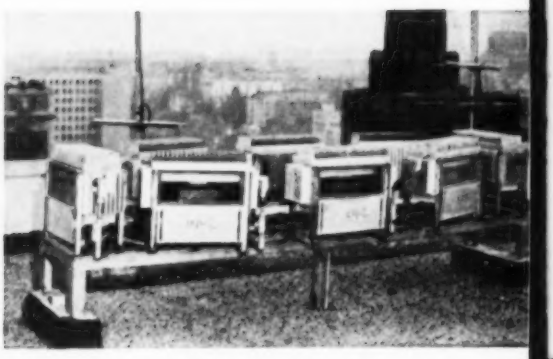
p/a products


Corner beads adjusted for desired thickness of plaster
First (scratch) coat gypsum-perlite plaster
Second (brown) coat gypsum-perlite plaster
Finish coat
Self-furring diamond mesh metal lath
Self-furring diamond mesh metal lath
Metal lath lapped 1" and tied at 6" vertical spacings
Corner bead

A new method of fireproofing steel columns, developed and tested at the Underwriters' Laboratories, employs lightweight-aggregate plaster and self-furring metal lath bent to fit columns. Indentations in the lath hold it ¼" from the steel surface, providing space for the plaster to key. No channel furring is required. Metal Lath Manufacturers Assn., Engineers Bldg., Cleveland 14, Ohio.

Aluminum-extruded trim assemblies for modern fronts have been introduced in new concave, interlocking series. These can be used horizontally or vertically in a variety of combinations. Included in the series and shown *(below)* are top angle, single-fluted, double-fluted, and single-fluted starting members. Desco Metals Co., 2276 Wilkins, Detroit 7, Mich.





Eight electrical "watchdogs" installed on the roof of the new Los Angeles Statler Center hotel and office building automatically vary the cooling capacities of the building's air-conditioning system according to changes in the angle and intensity of the sun's rays. Each unit of the solar compensator faces a direction corresponding to one of the major exposures of the building's wings. Carrier Corp., Syracuse, N. Y.

air and temperature control

Forced-Air Furnaces: two new oil-fired, forced-air furnaces available in six capacities from 75,000 to 144,000 Btu per hr. One model, primarily for perimeter heating applications in basementless homes, is downflow type with warm-air outlet at bottom of unit and return-air inlet at top. Other model is vertical type, listed for basement, utility room, or closet applications. Gray hammertone finish, chrome trim. Affiliated Gas Equipment, Inc., 17820 St. Clair Ave., Cleveland 10, Ohio.

Water-Air Gas Heater and Space Heater: new automatic gas water heater and space heater employs reverse air flow principle to provide maximum exchange of tank heat. Applications include dehumidification of damp basements, augmenting central heating systems, and supplying garage heat. Standard size water, gas, and flue connections; unit measures 66" high, 20" in diameter, has 30 gal water capacity, 25,000 Btu burner. Handley-Brown Heater Co., Brooklyn Rd., Jackson, Mich.

Heating Cooling Control Package: new control panel engineered to perform necessary intermediate switching functions of residential heating-cooling units is designed for use with manufacturer's thermostats with built-in selector switches. System can be used with heating and either single or two-stage cooling with 2, 3, or 5 tons capacity, single phase, and up to 7½ tons capacity, three phase. Panel size: 12" x 9½" x 4¾". Minneapolis-Honeywell Regulator Co., 2954 4 Ave., Minneapolis, Minn.

KS Enclosures: new baseboard-type enclosures for commercial and industrial installations available with line of accessories including joining pieces, corners, and end enclosures. Units mounted on full metal backings. Outline louvers located in front skirt so that convection currents are directed away from wall to improve temperature distribution. Galvanite or prime coated 18-gage steel. Vulcan Radiator Co., 16 Francis Ave., Hartford, Conn.

Type HP Heat Pump: new all-electric heat pump, depending solely on air for its exchange medium, provides heat in winter, cooling and dehumidification in summer, and ventilation, circulation, and continuous cleaning of air. Automatic operation of reversing cycle. Models: 3 hp, 30,000 Btu capacity; 5 hp, 50,000 Btu capacity. Westinghouse Electric Corp., 200 Readville St., Hyde Park, Boston 36, Mass.

Gasaver Furnace: new two-capacity furnace automatically adjusts fuel consumption and warm-air circulation to weather; extra outdoor thermostat controls operation. Six forced-air and three gravity models available; Btu ratings range from 63,750 to 176,000 output. The Williamson Heater Co., 3503 Madison Rd., Cincinnati 9, Ohio.

construction

Alsynite #200-FR Panels: self-extinguishing, fire-resistant translucent glass-fiber panels designed for highly specialized installations in critical fire areas are made with recently developed resins. Uses include skylights, sidelights, partitions, shower doors, signs, patios, and awnings. Available in standard corrugations and flat sheets, in either maize, light green, or opal. Alsynite Co. of America, 4654 DeSoto St., San Diego, Calif.

Calsi-crete: cellular concrete, developed in Europe, is claimed to have insulating, load bearing, acoustical, and water resisting qualities suitable for walls, roofs, partitions, and firedoor cores. Weight of material is 1/7 to ¼ as much as concrete, depending on density required; insulation value eight to 16 times that of concrete. Material can be nailed, sawed, and cut. Jackson & Church Co., Hamilton at Ahlborn, Saginaw, Mich.

Ruberoid Special Roofing Bitumen: new product developed as alternate to scarce roofing pitch in applying built-up roofs of

coal-tar pitch, tarred felt, and with gravel or slag surfacing. Applied in accord with methods and specifications governing application of coal-tar pitch roofs and subject to same roof deck incline limits. The Ruberoid Co., 500 5 Ave., New York 36, N. Y.

Sturdalite, Versatex, and Versarite Building Materials: new line of reinforced plastic building materials includes shatterproof translucent structural panel with corrugated or plain, flat or curved surfaces; siding and roofing material that does not require painting; and glass-fiber reinforced plastic chalkboard with smooth slate-green surface. Wright Mfg. Co., P. O. Box 6567, Houston, Tex.

doors and windows

Guardian Lock: new low-priced cylindrical locks now available for low-to-moderate priced houses. External parts of solid brass, bronze, and aluminum; interior working parts steel, zinc-plated, and dichromated. Locks are adjustable to any residential door from 1-3/8" to 1-¾" thick. The American Hardware Corp., P. & F. Div., 100 Orchard St., New Britain, Conn.

Fenestra Residential Projected Windows: new line of steel windows, which will include 10 types, consists of projected-in and projected-out ventilator units and fixed lights for use in various combinations. Weather protection offered includes rain-shedding qualities of projected-out ventilators and draft-free ventilation by ventilators which tilt in. Detroit Steel Products Co., 3209 Griffin St., Detroit 11, Mich.

Feldmont Hinge: new all-weather ball-bearing window and door hinge can be employed on doors, both primary and storm, up to 70 lb. Eliminates thumb screw, crank, gear, and friction devices while allowing ventilation at desired position; furnished with either cadium-plated steel or aluminum screws. Feldmont Products, Monticello, N. Y.

Safe-T-Flex: new door stop has hard rubber shock absorber, coil spring extending full length of hollow-steel tube, and flexible ball-chain. Tube, finished in bronze or chrome, rides with contact, then automatically falls back to original position. Wall plate is permanently attached to baseboard. Franklin Products, Inc., P. O. Box 44, Acton, Ind.

Pacemaker Shelton Lock Set: addition to line of key-in-knob lock sets is designed for private dwellings, large-scale housing, and prefab houses. Features of lock set include five-in-tumbler cylinder lock, dual action opening (either knob or key), stamped or solid machined-steel working parts. Lock set is adaptable to door thicknesses from 1-3/8" to 2". Harloc Products Corp., 25 Fox St., New Haven, Conn.

electrical equipment, lighting

Star-Liner Luminaires: new addition to line of commercial luminaires features glass panels with 30° x 40° shielding. Panels are framed by rounded metal trim rails. Fixture is available in two-lamp and four-lamp 4' models for slimline, standard fluorescent, or rapid start lamps; 8' units for 96" slimline lamps. Garcy Lighting, 1750 N. Ashland Ave., Chicago 22, Ill.

Model 470 Fluorescent Island Light: horizontal fluorescent fixture designed for low cost change-over to wide range, high intensity pump-island lighting is equipped with instant start ballasts and six instant start lamps. Fixture has built-in leveling device, five ½" knockouts in top for easy spot or flood lampholder mounting, can be mounted on poles, standard or bracket arms, or suspended under canopies. Dimensions: 49½" long, 24" wide, 6" high. Guardian Light Co., Oak Park, Ill.

Stage Switchboard: new lighting control for school, church, theater, and other auditoriums operates on 3-phase, 4-wire, or single phase AC systems. Switchboard is built on freestanding, rigid-angle iron framework, permits both individual and gang operation. Dimmers are individual units of variable voltage auto-transformer type with circular toroidal wound coils. Individual, group master, and grand master levers. Kelek Co., Norwood, Mass.

HQ Series Electric Generating Plants: two new gasoline-driven electric plants added to line of engine generators are rated at 10,000 and 15,000-w AC. Models, powered by 4-cylinder, water-cooled engines, are for both primary and standby applications and are available in all standard voltages, frequencies, and phases. Both 10 and 15-kw units offered in housed and unhoused models. D. W. Onan & Sons Inc., 3626 University, S.E., Minneapolis 14, Minn.

Wascolite Ventdome: prefab daylight and ventilation unit consists of acrylic plastic skylight and built-in ventilating unit. Two types available: powered unit with enclosed fan and gravity unit with adjustable aluminum louvers. Unit is designed for installation with special roof, curb, or flashing construction; manufactured in square and rectangular shapes in nine stock sizes; special sizes and types made to order. Wasco Flashing Co., 87 Fawcett St., Cambridge 38, Mass.

finishers and protectors

Hayproc Invisible Silicone Water Repellent: clear liquid for treating masonry walls to make them water resistant is a five percent solution of silicone resins in a high solvency aromatic mineral spirits. Liquid may be applied at temperatures as low as 0 F and is suitable for most types of masonry surfaces. Repellent lines but does not fill masonry pores; also reduces staining tendency. The Haynes Products Co., 4007 Farnam St., Omaha 3, Neb.

Damp-Seal: new oil-base paint for waterproofing cinder blocks, cement blocks, concrete, brick, stone, stucco, tile, and asbestos. Grit-like volanic ash filler fills up small pores and stops capillary action. Suitable on interior or exterior surfaces, above or below grade, and can be used as sealer and filler for high gloss enamels. Ready mixed, seven colors, applied by brush or spray. The Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio.

Stonhard Stoncote: new protective coating developed for use in maintenance areas where rust and corrosion are special problems provides nonoxidizing acid- and water-resistant film over metal, concrete, or wood. Coating resists acids, oils, alcohol, gasoline, brines, bleach solutions, ammonia, and other chemical agents. Available in colors, clear, or aluminum. Stonhard Co., Dept. ES, 1306 Spring Garden St., Philadelphia 23, Pa.

West Concrete Floor Sealer: one-coat sealer for newly-laid and repaired concrete floors allows residual moisture to rise out of new concrete and serves as protective coating to prevent dusting and spalling. With protection, new floor can be put to use sooner. One gallon covers from 400 to 600 sq ft, can be applied without prior acid treatments. West Disinfecting Co., Orchard & West Sts., Long Island City 1, N. Y.

insulation (thermal, acoustical)

Fluted Insulated Wall: new wall panels will overlap horizontally in ship-lap joints, interlock along length with double male and female joints. Insulation U value approximately .15. Factory or field assembled in 16 B & S gage aluminum, 18-gage steel painted, galvanized or stainless; lengths up to 33'. Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.

Thermoglare Sheet, Thermoglare Film: new thermoplastic sheet and sprayed-on thermoplastic film will filter out up to 95 percent of ultra-violet rays and eliminate approximately 80 percent of infra-red transmission, according to laboratory and installation tests. Both film and sheet are translucent and are available in blue-green, light gray, and white. Eastern Industrial Service Inc., Cambridge, Mass.

sanitation, water supply, drainage

Cadet Shower: new packaged shower cabinet has smooth cove corners, hollow stiles, and completely enclosed threshold. Unit may also be built-in through use of escutcheon-type adapter frame and rigid one-piece slip-on top. Precast terrazzo receptor included. Showers are designed to fit into almost any 3 ft floor area. Fiat Metal Mfg. Co., 21-33 Borden Ave., Long Island City 1, N. Y.

Gas Water Heaters: line of water heaters for use with natural, manufactured, or LP gas available in 20, 30, and 40 gal capacities. Safety control automatically shuts off all gas if pilot flame is extinguished. Steel tank hot-dip galvanized inside and out, protected against corrosion by magnesium alloy rod. Casing finished in white baked enamel with hammerloid gray enamel base and supports. Perfection Stove Co., 7609 Platt Ave., Cleveland 4, Ohio.

specialized equipment

Royal-wood Kitchens: new line of natural birch kitchen units designed by Raymond Loewy Associates includes variety of cabinet sinks, base cabinets, wall cabinets, and accessories. Triple-coated lacquer exterior finish, micarta counter tops in seven colors, heavy acid-resistant porcelain enamel on steel sink. The Mengel Co., 4 and Colorado Sts., Louisville, Ky.

p/a manufacturers' literature

Editors' Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.

air and temperature control

★ **1-45. Aerovent Axial Flow Fans** (20-a), 64-p. catalog with detailed information on industrial fans, roof ventilators, shutters, and other ventilating equipment. General ventilating requirements, installation data, certified ratings, dimensions, and specifications. Photos, drawings, and charts. Aerovent Fan Co., Inc., Ash and Bauer Sts., Piqua, Ohio.

1-46. Berger Furnaces, 4-p. folder describing forced-air and gravity type furnaces designed for both large and small houses with basements; oil or gas models. Information on return air chamber, cabinet, air heating chamber, and controls. Cutaway drawings, photos of models, specifications. Berger Furnace Mfg. Co., 5920 Center Ave., Pittsburgh, Pa.

1-47. Powermaster Packaged Automatic Boilers, AIA 34-B-1 and 30-C-1 (1219), 16-p. bulletin describing line of packaged automatic boilers in 17 sizes from 15 through 500 hp for steam process as well as steam and hot water heating service. Detailed specifications on boiler, burner, and control systems, typical installation photos, drawings, cutaway views, and boiler data. Orr & Sembower, Inc., Morgantown Rd., Reading, Pa.

1-48. Remington Moisture Magnets (531), 6-p. folder providing data on industrial heavy-duty electric dehumidifiers. Steps for determining minimum dehumidifying equipment and capacity needed to eliminate moisture problems. Typical uses of equipment, performance data, dimensions, and specifications. Photo, tables, drawings. Remington Corp., Air Conditioning Div., 171 Willey St., Auburn, N. Y.

Four 2-p. bulletins on water, blast heat, refrigerant, and steam distributing tube coil lines. Construction features, physical data, photos, drawings. U. S. Air Conditioning Corp., 3300 Como Ave., S. E., Minneapolis 14, Minn.:

1-49. Water Coils (67C)
1-50. Direct Expansion Coils (69C)
1-51. Steam Distributing Tube Coils (66C)
1-52. Blast Heat Coils (65C)

1-53. Webster Baseboard Heating (B-1602), 16-p. catalog giving technical data and IBR approved ratings for baseboard heating system. Illustrated discussion of design features, dimensions, list of optional features, typical specifications. Photos, drawings, charts. Warren Webster & Co., 17 and Federal Sts., Camden 5, N. J.

construction

2-52. Aircomb, 30-p. brochure describing a high strength, lightweight structural material originally developed for the aircraft industry which now has broader uses. Rigidity-weight ratio, insulating properties, durability data, structural characteristics, weight data, price list. Douglas Aircraft Co., Inc., 3000 Ocean Park Blvd., Santa Monica, Calif.

2-53. Masonite Presdwood, AIA 23-L (5209), 24-p. booklet on various types of wood-fiber panels with extensive uses in architectural design and construction. Average physical properties, working information, fastening cabinet details, finishing, underlayment application, specifications. Drawings and charts. Masonite Corp., 111 W. Washington St., Chicago 2, Ill.

2-54. Two Typical Wood-Frame Houses Exposed to Energy Released by Nuclear Fission, 16-p. booklet reporting the results of the atomic blast at the Nevada Proving Ground, March 17, 1953, on two wood frame houses located 3500 ft and 7500 ft from the blast center. Performance data, photos of houses at various times during exposure, general conclusions. National Lumber Manufacturers Assn., 1319 18 St., N. W., Washington 6, D. C.

★ **2-55. A Catalog of Building Stone,** 48-p. catalog describing all types of building stone now being quarried in the U. S. and Canada; approved by AIA Technical and Geological Committees. Detailed information includes classifications of building stone, characteristics of the various stones, surface finishes, and a comprehensive index of building stones. International Cut Stone Contractors' and Quarrymen's Assn., 40 E. 56 St., Indianapolis, Ind.

2-56. Concrete-Forming Tables for Slabs, Columns and Beams, 10-p. booklet with tables compiled to serve as aid in erection of formwork for slabs, columns, and beams. Tables give spacing of girts or stringers when using manufacturer's panel forms, spacing of joists and girts when using ¾" plywood for forms, and other spacing requirements. Detailed drawings of grooves and holes for three types of panels. Symons Clamp & Mfg. Co., 4249 Diversey Ave., Chicago 39, Ill.

doors and windows

3-49. Adlake Aluminum Windows, 16-p. catalog on line of aluminum commercial, light commercial, custom, and double glazed windows. Specifications, full-size details of various types, balance data and required clearances, information on weatherstrip and hardware. The Adams & Westlake Co., Safford St., Elkhart, Ind.

3-50. Lemco Aluminum and Steel Window Products, AIA 16-E (53-1), 12-p. catalog giving information on extruded aluminum awning windows, aluminum and steel casement windows, and custom-built heavy section aluminum windows. Standard sizes, specifications, full-size sections, installation details, photos of hardware. Croft Steel Products, Inc., 16 Market St., Jamestown, N. Y.

3-51. Steel Commercial Windows, Industrial Doors, AIA 16-E-1, 20-p. brochure describing center-pivoted, projected, security, and continuous types of commercial windows and hinged, sliding, accordion, and vertical lift industrial doors. Screen and mullion details, dimensions of window openings. Door information: tables of standard sizes, drawings, specifications, installation details. Michel & Pfeffer Iron Works, Inc., 10 and Harrison Sts., San Francisco 3, Calif.

3-52. Weldwood Fire Door, AIA 19-E-1, 4-p. folder containing data on wood-faced door bearing Underwriters Laboratories' Label for Class "B" and "C" openings. Comparative heat transmission chart, typical installations, specifications, cutaway drawing, and suggested hardware and installation data. Range of sizes and weights. U. S. Plywood Corp., 55 W. 44 St., New York 18, N. Y.

3-53. Yale Residential Tubular Locksets, A.I.A. 27-B (AT 27), 6-p. bulletin describing locksets for entrance, bedroom, bathroom, patio, passage, and closet doors. Illustrated construction features, drawings of models, specifications. The Yale & Towne Mfg. Co., Stamford Div., Stamford, Conn.

electrical equipment, lighting

★ **4-33. Electro Silv-A-King Lighting,** 118-p. catalog giving detailed information on line of fluorescent and incandescent lighting equipment for commercial and industrial buildings, either indoor or outdoor installations. Construction and installation data, coefficient of utilization tables, dimensional data, reports of Electrical Testing Laboratories, Inc. Photos and detailed drawings of models. Electro Silv-A-King Corp., 2000 W. Fulton St., Chicago 12, Ill.

4-34. Federal Noark Safety Switches (SS-15), 28-p. bulletin listing types of safety switches ranging from 30 to 1200 amp and including front-operated, visible-blade models; units equipped with weather-resistant enclosures. Operational advantages, illustrations, accessory data, enclosure types and sizes, ordering information. Federal Electric Products Co., 50 Paris St., Newark, N. J.

4-35. IBM Electronic Utilities Control, 4-p. folder describing electronic time and program controls system for automatic su-

pervision of various mechanical functions; regular AC lighting wires are used. Programs can be set up on varied daily schedules as well as for inoperative periods. Description of new electronic portable paging system also included. International Business Machines Corp., 590 Madison Ave., New York 22, N. Y.

4-36. Lighting by Novelty, AIA 31-F-2 (63), 24-p. catalog showing designs of commercial, residential, and church lighting fixtures. Photos of models, standard finishes, dimensional information, drawings, list price sheet. The Novelty Lighting Corp., 2480-90 E. 22 St., Cleveland 15, Ohio.

★ **4-37. Wakefield Lighting,** AIA 31-F, folio containing brochures on four overhead lighting systems consisting of integrated modular ceiling elements, including luminaires, rigid-arch diffusers, suspended acoustical baffles, sprinklers, and metal partitions. Typical layouts for various patterns, specifications, cross-section details, coefficient of utilization tables, photos of installations. Also brochures on two luminaires. The F. W. Wakefield Brass Co., Vermilion, Ohio.

insulation (thermal, acoustical)

6-18. Acoustical Fastening Systems, 4-p. folder illustrating basic system of acoustical fastening and rigid-beam suspension system that allows spacing of furring channels up to 8 ft on centers. Details of rigid beam, tee, channel clip, angle molding, and splice made of electro-galvanized bonderized steel. Eastern Machine Products Co., 1601 Wicomico St., Baltimore 30, Md.

6-19. Insulation—Metal Buildings (F-9), 4-p. bulletin describing the use of glass fiber insulation in steel buildings. Outline of three methods of installing material depending upon particular conditions in commercial or industrial structure. Standard product data chart, sound absorption and thermal conductivity data. Drawings, charts. Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio.

sanitation, water supply, plumbing

7-16. Delany Flush Valves, AIA 29-H-21 (53), 36-p. catalog showing line of flush valves for residential, commercial, hospital, school, and other installations. Available variations, piping design and data, ordering information. Drawings, charts, and photos. Coyne & Delany Co., 834 Kent Ave., Brooklyn 5, N. Y.

7-17. Servel Automatic Storage Gas Water Heaters, AIA 29-D-2, five 2-p. data sheets describing line of gas water heaters. Information on parts, warranty, installation, and ordering. Dimensional data, drawings, photos of five models. Servel, Inc., Chiller St., Evansville 20, Ind.

specialized equipment

8-29. The Finest in Drafting Machines (A-2000), 20-p. booklet presenting mechanical description of various drafting machine models including gravity compensated, track-type, civil engineering, and detail machines. Also information on types of graduations available in line of scales. Photos, detailed drawings. Charles Bruning Co., Inc., 4700 Montrose Ave., Chicago 41, Ill.

8-30. Kidde Fire Protection (P8R5), 12-p. brochure describing a line of fire extinguishing and smoke and fire detecting systems. Extinguishers include carbon dioxide, dry chemical, foam, water, and vaporizing liquid types. Capacity and dimension information, illustrations of models. Underwriters' Laboratories ratings. Walter Kidde & Co., Inc., 476 Main St., Belleville 9, N. J.

8-31. Loxit-Tylac Komp-Thrift Trim, Tackboard, Chalkboard, 6-p. catalog covering line of chalkboards, tackboards, and chalkboard trims. Available sizes and colors, typical specifications, advantages, color drawings. Loxit Systems, Inc., 1217 W. Washington Blvd., Chicago 7, Ill.

surfacing materials

9-16. Armstrong's Rubber Tile (F-554-552), 8-p. brochure with photos showing rubber tile flooring installations in houses, libraries, stores, and office buildings. Features, sizes, colors, gages, maintenance information. Color chart, design possibilities. Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.

9-17. Tile-Tex Asphalt Tile (C11), 4-p. folder illustrating available colors in line of asphalt tile flooring. Photos of installations, data on standard sizes, special sizes, thicknesses, and feature strips. Color illustrations of possible patterns. The Flintkote Co., The Tile-Tex Div., 1200 McKinley Ave., Chicago Heights, Ill.

9-18. Precast Castlite Insulating Roofing Tile, 4-p. booklet on roofing tile designed to span either 36 or 48 in.; precast perlite concrete slabs are 2 5/8" thick and 24" wide. Specifications, features, details. Drawings, photos. Precast Slab & Tile Co., Inc., 1367 S. Kings Highway Blvd., St. Louis 10, Mo.

9-19. Ruberoid Special Roofing Bitumen, AIA 12-B-1, 16-p. booklet describing roofing bitumen as alternate for coal tar pitch in built-up roofs. Detailed specifications covering bitumen and air-vent asphalt felt over different base materials include steps for laying roofing, materials, workmanship, general requirements for contractors, cutaway drawings. The Ruberoid Co., 500 5th Ave., New York 18, N. Y.

(To obtain literature, coupon must be used by 1/1/54.)

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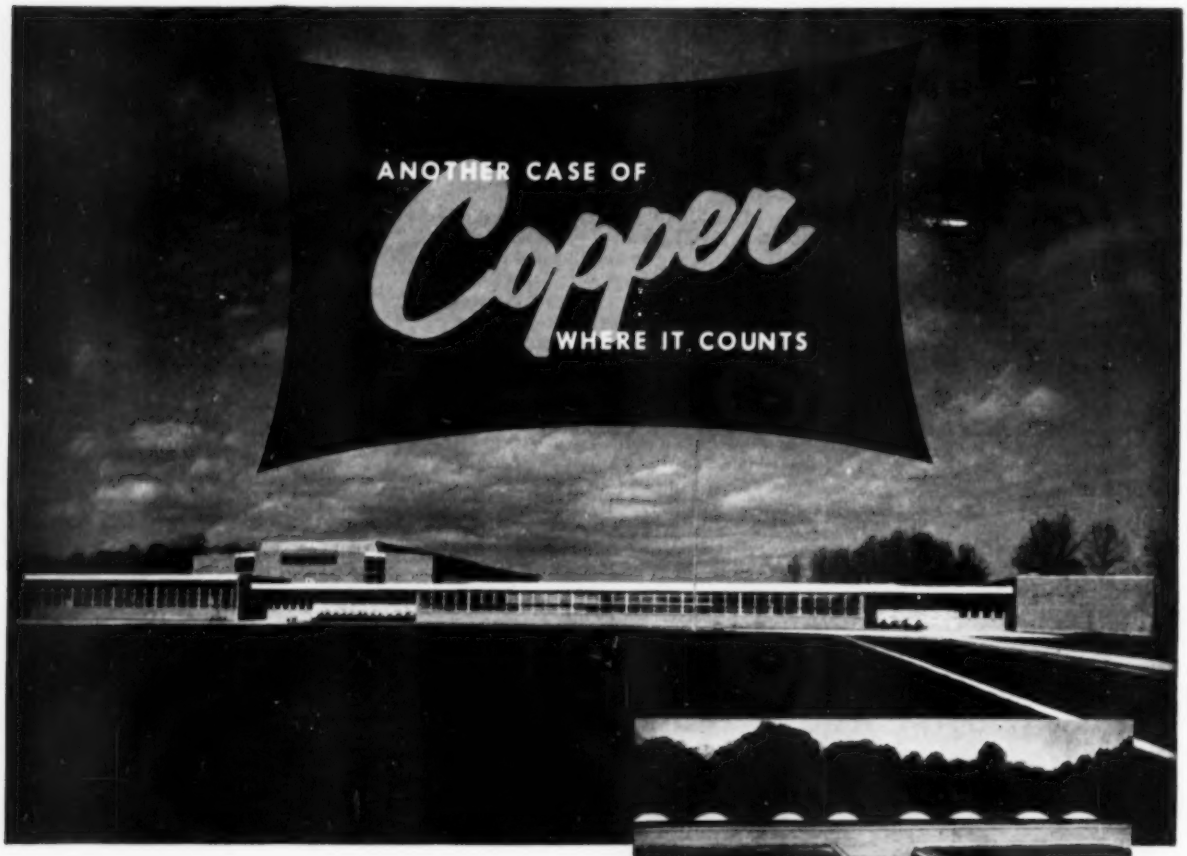

Some architects still associate the ancient metal copper with cathedral spires, mansard roofs and dormer windows. But McLeod and Ferrara, architects for the George Mason Junior-Senior High School, and many other prominent architects, also see copper as the ideal metal for their most modernly designed structures.

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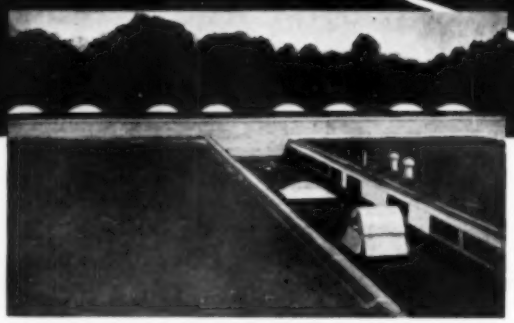
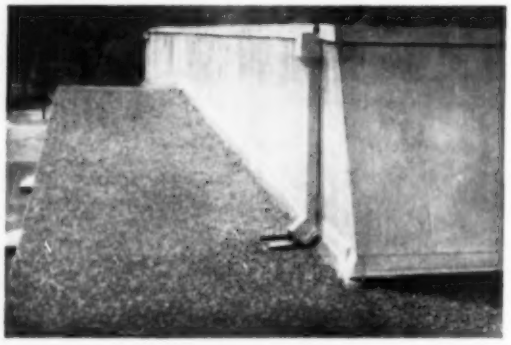


LASTING PROTECTION for the vital spots on the roof of the George Mason Junior-Senior High is assured by the use of non-rusting Revere Copper for gravel stop facia, box gutters, downspouts, monitor skylights, expansion joints and miscellaneous flashing.



THE MATHY COMPANY, Sheet Metal Contractors, Washington, D. C., were pleased that Revere Copper was specified on this job because it is so readily worked and takes solder beautifully. 7,000 lbs. of Revere Cold Rolled Copper for flashing, gutters, downspouts, etc. 1500 lbs. of Revere Lead Coated Copper was used for the monitor skylights. Gravel stops are 20 oz. copper while all other is 16 oz. Revere Distributor, York Corrugating Company, Washington, D. C.

smoother

Perley M. Clark of Otis Elevator has done an enormous amount of work in teaching many of us in the New York area how to write good elevator and moving-stairway specifications. He tells a story about one of Otis' men who wrote his first specification for an Architect in the days when Otis' local representatives bid directly. The specification was issued as written, bid upon, and contract awarded to Otis. It was discovered subsequently that no guide rails were specified. The question arose how to inform the Owner and worse yet how to persuade him to grant an extra for the omission. In some mysterious fashion the Owner paid without protest. When the Otis man was asked how he managed it he said that he had no trouble in convincing the Owner that the "guide rails would provide a much smoother running job." Speaking of Otis, this is the 100th year since they started an elevator shop on the bank of the Hudson River at Yonkers, New York. Their list of firsts in the vertical transportation industry is sufficiently impressive to warrant telling here:

1853 Elisha Graves Otis invented the first safe elevator and founded the elevator industry. First elevator sold was at 275 Hudson Street (N. Y.).

1857 First passenger elevator installed in a store at Broadway and Broome Street (N. Y.).

1860 First direct connected steam elevator patented and installed in store of Ball, Black and Company (N. Y.).

1878 First high speed hydraulic elevator made it economically possible for commercial buildings to increase in height. Boreel Building (N. Y.) had first group of four of these elevators.

1883 First regular elevator inspection service established for Otis customers.

1889 First successful electric elevator installed at 335 Fifth Avenue (N. Y.).

1892 First unit multivoltage (Ward Leonard) control for electric elevators used on Otis passenger elevator in Edison Pearl Street Station (N. Y.). First high-rise installation of this type made years later at 54 Maiden Lane (N. Y.).

1894 First recorded operatorless (push-button) elevator installed in a residence.

1900 First moving stairway (Escalator) exhibited at Paris Exposition.

1903 First gearless traction electric elevator for intensive service installed in Beaver Building (N. Y.).

1915 First self-leveling elevator invented and used for U. S. Navy.

1921 First complete elevator maintenance service offered to Otis elevator owners. It was introduced in Springfield, Illinois.

1924 First signal control elevators installed in Standard Oil Building (N. Y.).

1925 First full collective control elevators developed and patented.

1948 First automatic and electronic supervisory system (Autotronic) developed for intensive operation of a group of elevators. Among first installations were those in United Nations Secretariat Building and 100 Park Avenue (N. Y.).

1950 First group-supervised, intensive-service elevators, without attendants in cars, completed at Atlantic Refining Company Building, Dallas, Texas.

Necking-down—The cross-section of a test specimen beyond its yield point.

steel talk

The American Institute of Steel Construction tells us that in structural steelmen's language, a *starling* is not a bird, but a series of piles placed upstream of a bridge in construction, to protect the piers from moving ice. A *dolly* is a tool for holding the head of a rivet during driving. The man who holds the dolly is a *bucker-up*. A *buster* is a tool for knocking off a rivet head. Here are a few more odd and picturesque terms which go to make up the "talk of the trade."

Apron—A shield to protect a river bank or bed.

Battledeck floor—A steel-plate floor system for bridges and buildings.

Chicago boom—A type of derrick for hoisting steel, usually lashed to the outside of the building.

Cold cut—A cold chisel mounted on a handle like a hammer.

Crab—A hoisting device for winding rope or cable, when lashed or fastened to a vertical support.

Dead man—A log or beam buried in the ground for anchorage.

Dog—One of the clamps used to hold material in place on a chuck.

Fish belly—A steel member having a reverse curve at one or both ends.

Flat-head—A rivet or bolt that has been flattened.

Gag press—A press used for straightening structural shapes.

Guy—A rope or cable for bracing a steel member or derrick in place.

Ginny-wink—A short, light, stationary derrick.

Kip—One kilo pound, 1000 pounds.

Least-work—A method of determining stresses in the members of a redundant system.

Old man—A device fastened to a steel member to provide backing when drilling.

Shape—A hot-rolled cross-sectional steel member.

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Kitchen by R. A. Nelson & Co.
Roselle Park, N. J.

Page Beauchamp:

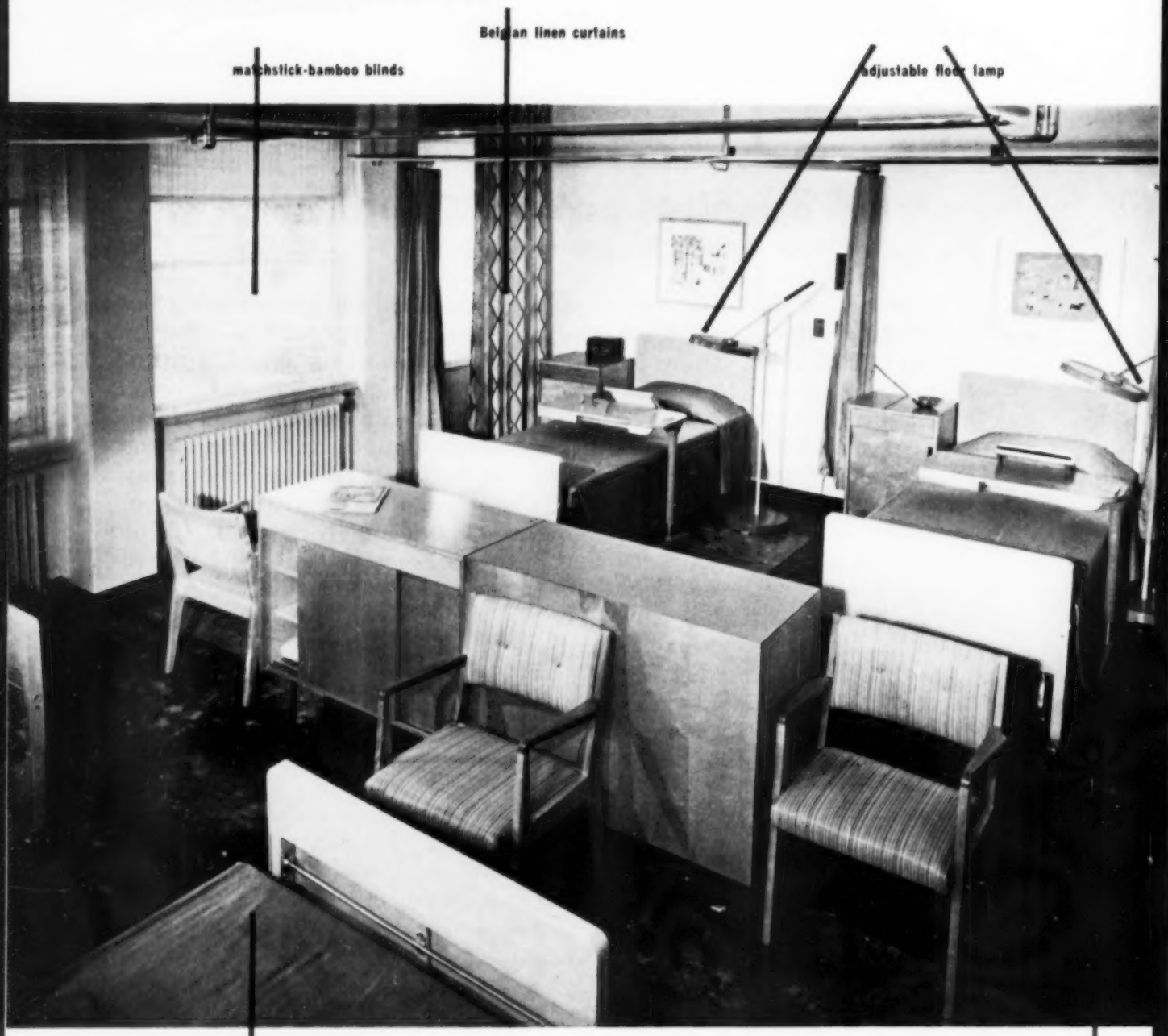
hospital patients' rooms

The rooms on the following pages were selected for presentation because they exemplify a fresh, forward-thinking approach to interior design in hospitals. There is a complete absence of the usual "institutional" or "clinical" look. Past theory evidently was that patients' rooms should be white, stark, and barely furnished. With emphasis on cheap maintenance and upkeep, there was no attempt to make the rooms comfortable, cheerful, and homelike. But here is proof that rooms may be both attractive and practical. The hospital beds are sturdy, yet enameled in soft, pastel colors—simple, yet handsomely designed. Color is used on walls, in draperies, and in the bedspreads—all washable in the hospital laundries. Especially encouraging is the elimination of harsh ceiling lights, the bane of every patient who stays in a typical hospital. The four-patient ward has had special attention. To define each patient's own area, the color of the flooring has been varied in alternating blocks, and chests are used as a room divider to help suggest as much privacy as possible. The warm wood tones of the furniture also add to the beauty of the room and dispel any hint of institutionality.

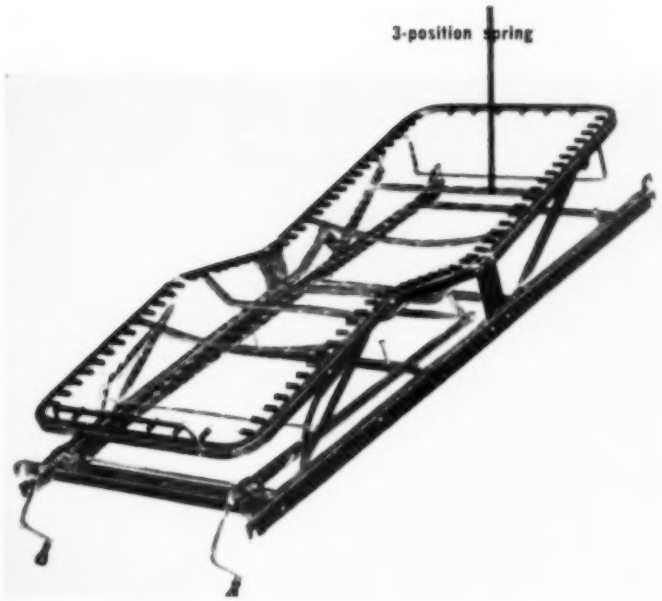
Now that there is a realization that beauty and a cheerful atmosphere are factors in promoting the well-being of patients, even greater strides will be made. Hospitals that have previously had a "look all their own" will borrow design techniques from other public buildings and even residences. More and more attractive fabrics and products can withstand rougher treatment and require little care. Finishes for furniture have been so perfected that no amount of washing or careless abuse will harm them. Therefore beauty need no longer take a back seat.

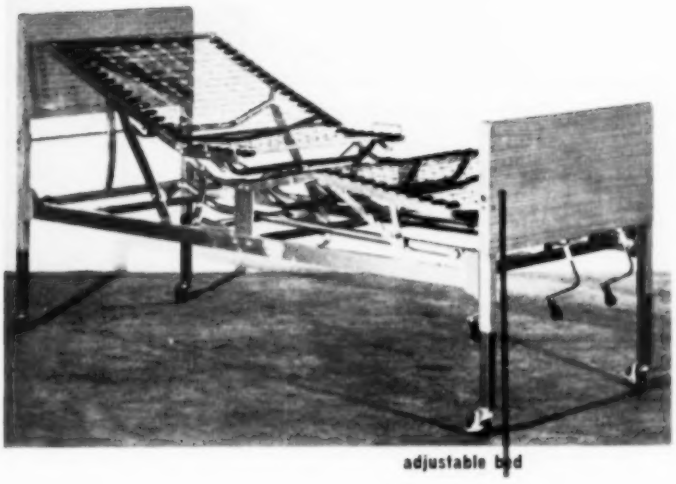
Here is a tremendous field that has hardly been touched by the interior designer. It will probably take some persuasion, even now, to convince many of those paying for hospital design that an interior designer is a necessary consultant, working hand-in-hand with those in the hospital field who know all of the requirements of a hospital room from the standpoint of service and therapy. The following examples offer proof that the interior designer is invaluable.

hospital patients' rooms



location	Four-Bed Patient's Room, Klingenstein Pavilion, The Mount Sinai Hospital, New York
interior designers	Maurice and Joseph Mogulescu & Gerald Luss: Designs for Business, Inc.
architects	Kahn & Jacobs





adjustable bed

data

furnishings and fabrics

Beds: #H-885-1/ "Vari-Rite" adjustable/ #L-146 all-position patch spring/ Simmons Co., 1870 Merchandise Mart Plaza, Chicago, Ill.

Over-bed Table: #1950 FT/ birch/ Formica tops/ Dekoron legs/ designed by Gerald Luss; Designs for Business, Inc./ Carrom Industries, Ludington, Mich.

Bedside and Storage Cabinets: birch/ Formica tops/ Dekoron legs/ designed by G. Luss/ Carrom Industries.

Arm Chair: #C-106/ birch/ woven Saran upholstery/ Jens Risom Designs, Inc., 49 E. 53 St., New York, N. Y.

Curtains: vat-dyed prints on Belgian linen/ custom colors/ L. Anton Maix, 162 E. 59 St., New York, N. Y.

lighting

Floor Lamp: custom design/ Plexiglas diffuser/ fluorescent tube/ designed by G. Luss/ Lightolier, Inc., 11 E. 36 St., New York, N. Y.

walls, ceiling, flooring

Walls: "Wall-Tex"/ custom color/ Columbus Coated Fabrics Corp., Columbus, Ohio

Ceiling: acoustic tile

Flooring: asphalt tile/ Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.

To produce a feeling of individuality and privacy for each patient, the floor of this room has been divided into four blocks of color and bedspreads are of alternating colors. The cabinets provide storage and also serve as room-dividers. Complete functionalism from a medical standpoint, practical maintenance for the housekeeping staff, and a warm atmosphere combined with the utmost in convenience for the patient, were the three major considerations. Absence of hard-looking metal furniture, glaring ceiling lights, and sterile white walls contribute measurably to the beauty of this room.

Photo: Ben Schnall

hospital patients' rooms

over-bed table

location | Two-Bed Room, Wheaton Community Hospital, Wheaton, Minnesota

architects | Thorshov & Cerny, Inc.

data

doors and windows

Doors: 1¾" standard birch

Hardware: Schlage Lock Company, Bayshore & Blanken Ave., San Francisco, Calif.

Windows: wood sash/ standard DSA glass/ in fixed sash/ IGA double glazed in operating sash/ Reese Metal Weather Stripping Co., 712 Park Ave., Minneapolis, Minn.

equipment

Baseboard Radiation: American Radiator and Standard Sanitation Corp., Sanitary Bldg., Pittsburgh, Pa.

furnishings and fabrics

Beds: #11846-L171/ semi-panel end/ over-bed table/ Simmons Co., 1870 Merchandise Mart Plaza, Chicago, Ill.

Chair: #654W/ armless/ Forest green cotton webbing/ Knoll Associates Inc., 575 Madison Ave., New York, N. Y.

Draperies: patterned cotton print/ beige ground; green, rust, and yellow all-over print/ hardware; 1" traverse track/ recessed mounting/ Kirsch Co., Sturgis, Mich.

lighting

Spot and Downlight: designed by architect from component parts/ Kurt Versen, Englewood, N. J.

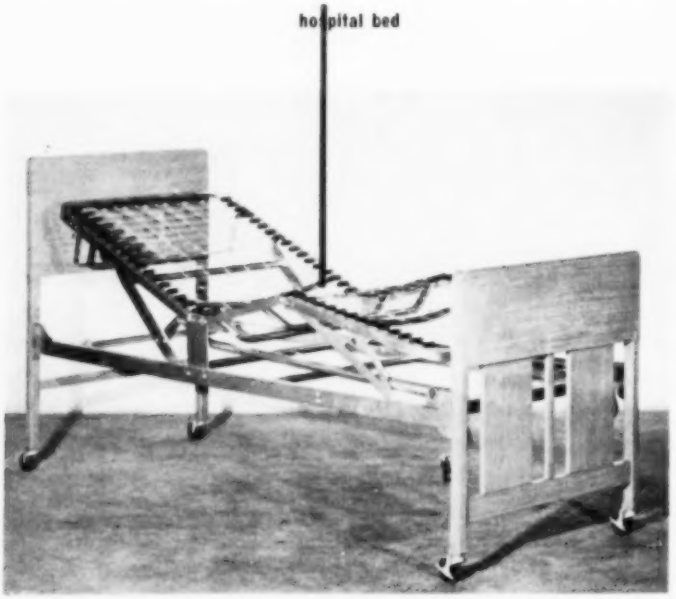
walls, ceiling, flooring

Walls: plaster/ paint: Benjamin Moore & Company, 509 Canal St., New York, N. Y.

Ceiling: "Gold Bond"/ Travacoustic/ tile squares/ National Gypsum Co., Buffalo, N. Y.

Flooring: #D 074/ asphalt tile/ gray, white field with green accent/ Tile-Tex Division, Flintkote Company, Chicago Heights, Ill.

Because the budget allowed an area just adequate, the interior designers concerned themselves with making this room look as spacious as possible. The furniture was selected for its long-range durability, ease of operation, and attractiveness. There has been a concerted effort to avoid the institutional look. Wall color is a primrose yellow, accent color is deep blue-gray, and the finish on the furniture is a soft pastel-gray. Just omitting the "hospital white" adds immeasurably to the cheerfulness of the room. *Photos: Reynolds, Photography Inc.*



hospital bed

acoustic tile
asphalt tile
baseboard radiation

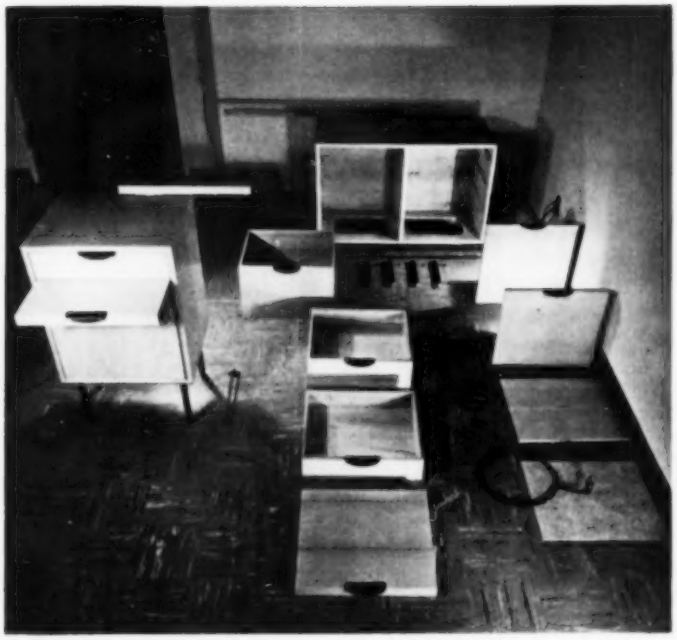
hospital patients' rooms

hospital bed

asphalt tile

location	One-Bed Room, Sinai Hospital, Detroit, Michigan
interior designers	Maurice and Joseph Mogulescu & Gerald Luss: Designs for Business, Inc.
architects	Albert Kahn Associated Architects & Engineers

modular furniture



data

furnishings and fabrics

Bed: #11-885-1/ L-146 spring/ "Vari-Hite" adjustable bed/ custom color/ Simmons Co., 230 Park Ave., New York, N. Y.

Over-bed Table: #1950FT/ birch/ Formica top/ designed by Gerald Luss; Designs for Business, Inc./ Carrom Industries, Ludington, Mich.

Bedside and Storage Cabinets: Formica top/ Dekoron legs/ designed by G. Luss/ Carrom Industries.

Arm Chair: adjustable/ birch/ designed by G. Luss/ Carrom Industries. **Side Chair**: birch/ Carrom Industries.

Curtains: vat-dyed print on Belgian linen/ custom colors/ L. Anton Maix, 162 E. 59 St., New York, N. Y.

lighting

Floor Lamp: birch base/ black baked enamel metal stem/ Butcher linen shade/ The Heifetz Co., 40 W. 25 St., New York, N. Y.

walls, ceiling, flooring

Walls: painted plaster

Ceiling: acoustic tile

Flooring: asphalt tile/ black with white and green marbling/ Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.

Five different color schemes were planned for the patients' rooms in this hospital—with bedspreads, curtains, beds, and over-bed tables of neutral beige, so that they are all readily interchangeable. Monochromatic schemes in pastel shades of blue-green, beige, yellow, and gray have accents of colors deeper than wall color, or a stronger contrasting color and black. Geometric patterns in the drapery fabric unite the scheme, all fabrics being preshrunk and vat-dyed so that they can be safely laundered by the hospital.

The modular furniture may be used in many combinations and adjusted to varying spaces in the rooms. The natural birch tones add warmth, tops are plastic-impregnated, and steel-tubing legs are plastic-coated for practicality. Rooms have been made as homelike as possible, with attention to ease of maintenance, comfort of patients, and minimized labor to keep rooms neat, clean, and new-looking.

Photo: Benyas Kaufman

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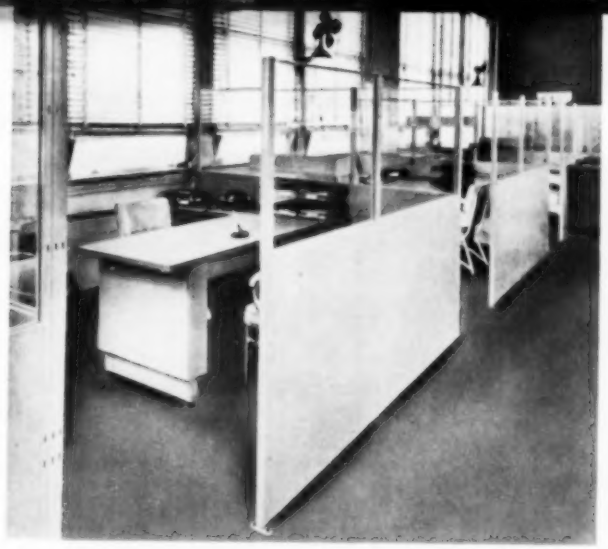

Free-Standing Partitions: supported by floor connector of heavy-metal angle that fits inside partition post/ broad base slotted to adjust for uneven floors may be attached to floor/ clamp grips and holds adjoining panels/ **The Globe-Wernicke Co., Ross & Carthage Ave., Cincinnati 12, Ohio**

Teacher's Desk: bevelled-edge cellular-core top/ faced with maple veneer/ available with plastic facing/ may be had with two 4" drawers and file cabinets/ knee panel optional/ height, 29", work surface, 48" by 30"/ **The Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago, Ill.**

Chairs and Ottoman: #41, #43, #51/ armless chair and armchair with ottoman/ imported from Sweden/ beech frame/ Swedish steel springs/ foam cushions in muslin or zipper-covered upholstery/ finishes in natural, sorrel, or walnut/ "knock-down" construction/ designed by Folke Ohlsson/ **retail:** $77, $126, $52 in muslin/ **Dux Company, 25 Taylor St., San Francisco 2, Calif.**

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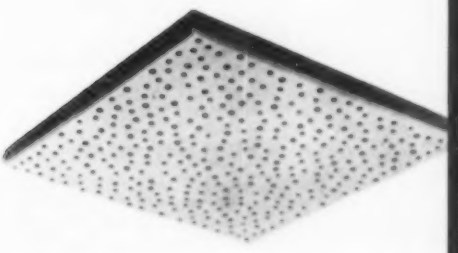
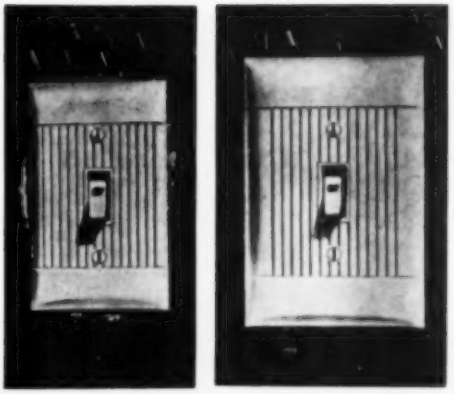
Honduras Mahogany Plywood Paneling: ¼" thick/ available in 6-, 7-, and 8-foot lengths/ 16-¼" wide/ edgegrooved/ prefinished/ **United States Plywood Corporation, 55 W. 44 St., New York 36, N. Y.**



Acoustic Tile: "Full Random"/ nondirectional perforation design in "Cushiontone" fiber tile/ narrow bevel edge/ white-painted surface reflects 78% of light that strikes it/ washable/ available with flame-resistant paint finish/ 12" squares in ½" and ¾" thickness/ **Armstrong Cork Company, Lancaster, Pa.**

Sliding Window: steel-framed glass window slides horizontally/ weather-stripped and uniform in design on all four sides/ nylon rollers at base with stainless steel axels and track cap/ brass self-latching pull/ Arcadia Metal Products, 324 North Second St., Arcadia, Calif.

Wall Plate: "Sierra Junior Plates"/ for double or single toggle switches to cover holes and scratches too large for ordinary plates/ 1" longer and proportionately wider/ fire-resistant urea plastic, product of Plaskon Division, Libbey-Owens-Ford Glass Company/ hard-surfaced, scratch- and heat-resistant with low electrical conductivity/ Sierra Electric & Manufacturing Company, E. 35 St. and San Pedro St., Los Angeles, Calif.



Glass-louvered Door: "Sun-Air"/ flush hardwood-plywood facing/ also has rust-proof steel screen/ 1¾" thick, 2'-8" wide, 6'-8" high/ Davidson Plywood & Lumber Co., 3611 E. Washington Blvd., Los Angeles 23, Calif.

Light for close work covers these drafting tables, but there are no outside distractions here. Decorative Blue Ridge *Satinol* Flutex is the reason for both these advantages. Office of Architect Irwin M. Johnson, Oakland, California.

A More working light comes through on both sides of this Mills Movable Wall. Blue Ridge Flutex Glass makes it possible, and offers decorative privacy as well. Designers: McGeorge-Hargett & Associates, Cleveland.

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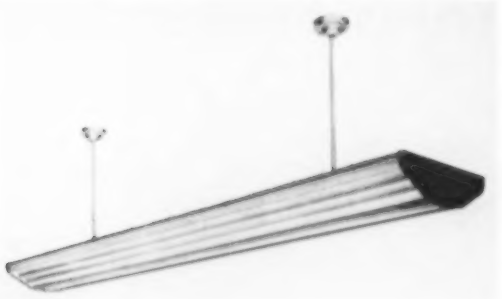
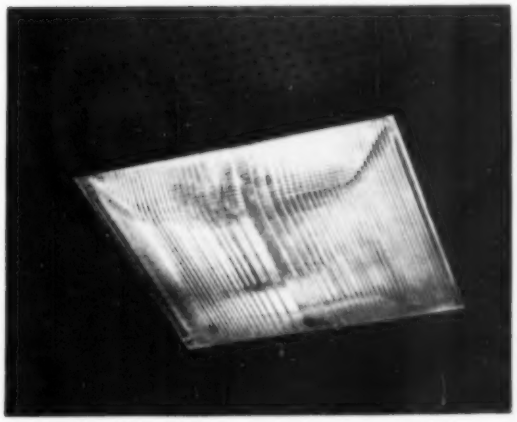
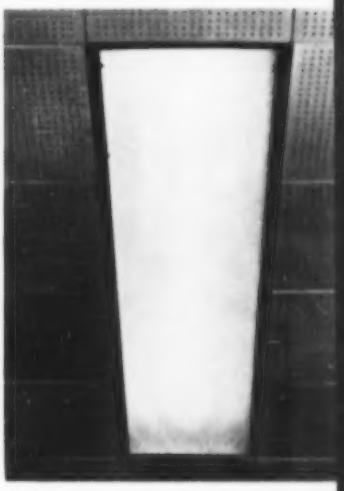
Indirect-Lighting Fixture: "Leadlighter" Model WLL/ "V"-type reflector/ metal shielding vanes/ 86% efficiency, high footcandle with low brightness/ available in 2-, 3-, and 4-light fixtures, standard fluorescent or slimline and half-section cove lights/ **Leadlight Fixture Company, Division of Oakland Engineering Company, 800 100th Ave., Oakland 3, Calif.**







Hospital Light: "Hospitality Light" #9104-9204/ all facilities combined in one master outlet/ double-swiveled reading light, adjustable for all positions of patient, has pull switch/ indirect lighting mounted on swivel for changing to downward position/ night light concealed/ two outlets for electrical appliances/ **Kurt Versen, 4 Slocum Ave., Englewood, N. J.**

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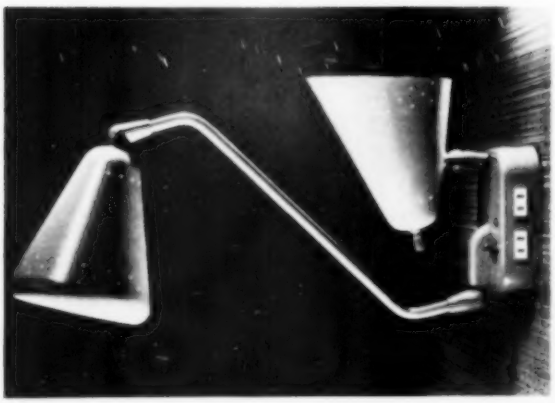

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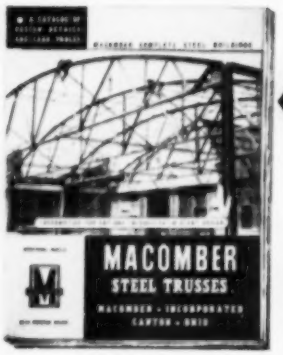

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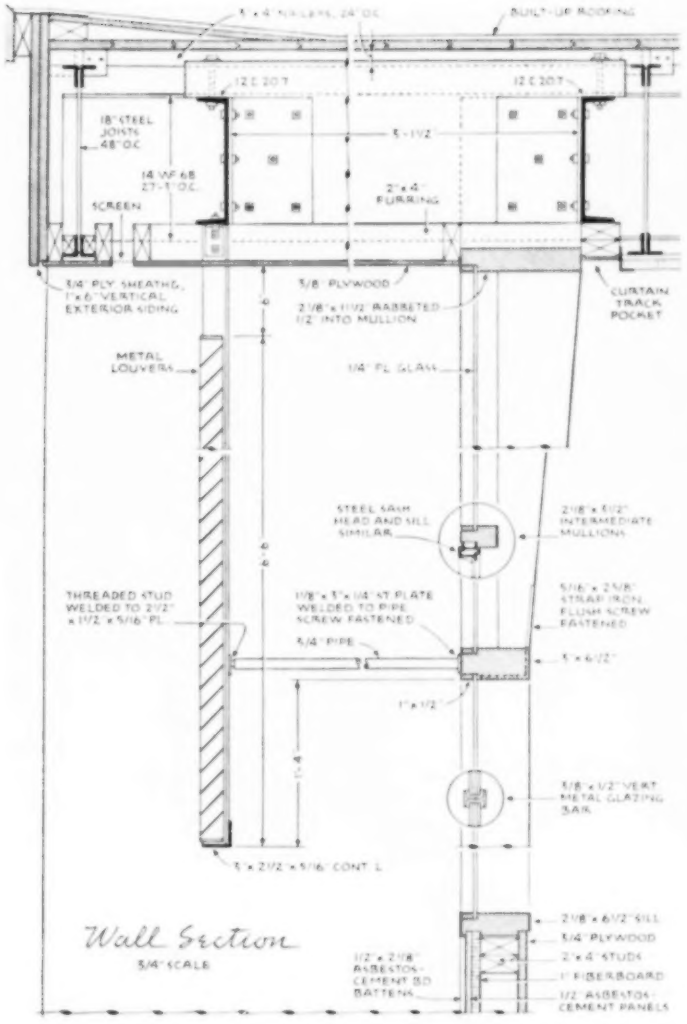
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1" FIBERBOARD
1/2" ASBESTOS-CEMENT PANELS
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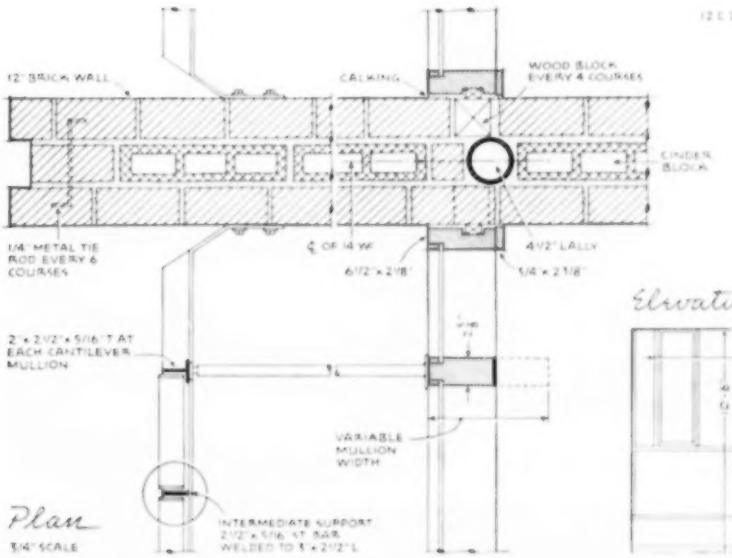
Wall Section
3/4" SCALE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2" x 2 1/2" x 5/16" T AT EACH CANTILEVER MULLION
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INTERMEDIATE SUPPORT 2 1/2" x 5/16" ST. BAR WELDED TO 5" x 2 1/2" L
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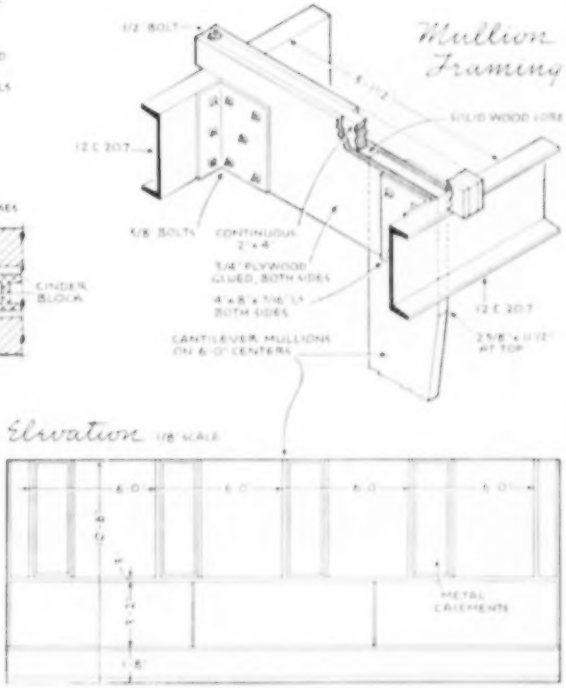

DARIEN JUNIOR HIGH SCHOOL, Darien, Conn.
Ketchum, Giná & Sharp, Architects

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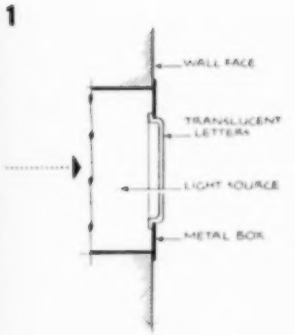

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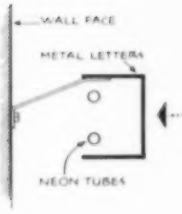

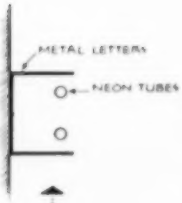

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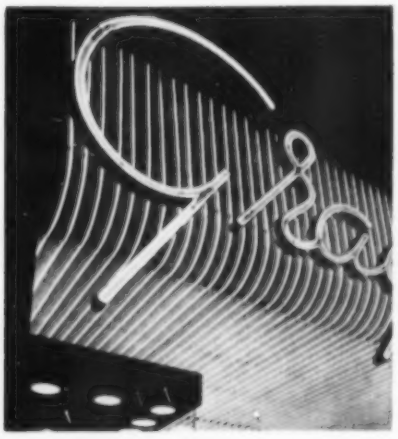

7

1 Hastings Men's Store, San Francisco, California: Gruen & Krummeck, architects. Philip Fein Photo. 2 Holly Women's Store, Baton Rouge, Louisiana: Morris Lapidus, architect. Rohm & Haas Photo. 3 Manhattan Men's Store, New York City: Morris Lapidus, architect. Gottscho-Schleisner Photo. 4 Joseph Magnin Store, Sacramento, California: Gruen & Krummeck, architects. Roger Sturtevant Photo. 5 C. H. Baker Shoe Store, San Francisco, California: Gruen & Krummeck, architects. Roger Sturtevant Photo. 6 Stan Hall Men's Store, Los Angeles, California: Gruen & Krummeck, architects. Garber-Sturges Photo. 7 Gray Sons Women's Store, Hollywood, California: Gruen & Krummeck, architects. Harry H. Baskerville, Jr. Photo.

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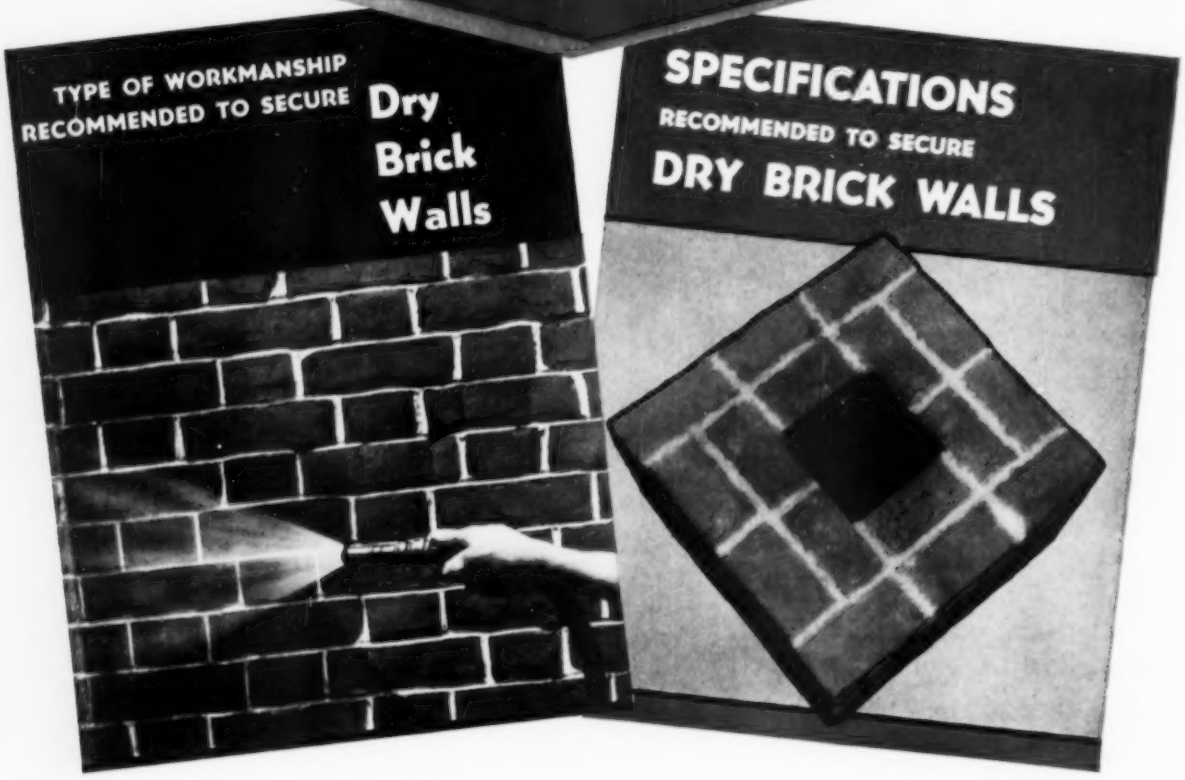

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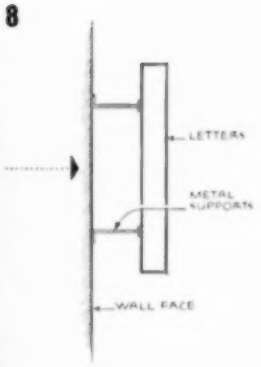

10

9

Projected Block

11

Brush Stroke

Applied Block

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13

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8 Grayson's Children's Store, Los Angeles, California: Gruen & Krummeck, architects. Harry H. Baskerville, Jr. Photo. **9** John Forsythe Men's Store, New York City: Morris Lapidus, architect. Gottscho-Schleisner Photo. **10** La Regina Women's Store, New York City: Joseph & Vladeck, architects. Ben Schnall Photo. **11** C. H. Baker Shoe Store, San Francisco, California: Gruen & Krummeck, architects. Roger Sturtevant Photo. **12, 13, 14** Milliron's Department Store, Los Angeles, California: Gruen & Krummeck, architects. Julius Shulman Photo.

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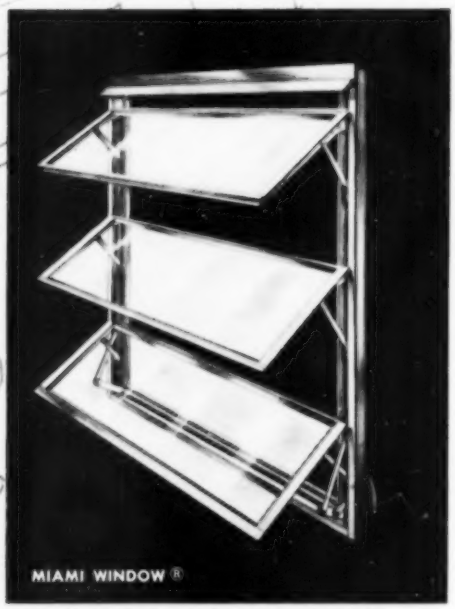

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by Bernard Tomson

it's the law

The *General Conditions of the Contract* require amendment to properly protect both Owner and Architect in their relations with the Contractor. The inadequacies of the *General Conditions*, as discussed in last month's column, can be summarized as follows:

1. The supporting papers to be submitted by the Contractor to justify his application for payment are insufficient.
2. The furnishing of proofs is made optional.
3. No provision is made for an audit of the Contractor's books and records to insure that proper payments have been made for labor and material furnished on the project, and that sub-contractors have been appropriately paid in accordance with the Contract and the *General Conditions*.

The application of the Contractor for payment is based in part upon the requisitions of sub-contractors for payment. If the money paid by the Owner pursuant to the issuance of a Certificate of Payment by the Architect is not utilized in turn by the Contractor to pay the sub-contractors, the position of the Owner can be seriously jeopardized. A quick and certain method of checking payments to sub-contractors should be provided. In other fields, periodic audits have furnished the answer and the same solution is called for in the construction field. The *General Conditions* should include a clause in which the Contractor agrees to subject his books and records to audit and his plant to inspection. A suggested provision reads as follows:

"The Contractor agrees that its books and records shall at all reasonable times be subject to audit and its plant subject to inspection, by the Owner or Architect, or by their authorized representatives. Compliance with this article shall constitute a condition precedent to the issuance of a certificate of payment by the Architect."

•

Now, *Article 24* of the *General Conditions* provides for applications for payments by the Contractor. The amendment required by this article is to eliminate the optional aspect of the furnishing of proofs by the Contractor and to provide adequate proofs. This Article might be amended in the following manner:

(Words in parentheses are to be eliminated from the article and italicized words are to be added)

"Art. 24. Applications for Payments—The Contractor shall submit to the Architect an application for each payment, and (if required) receipts or other vouchers, showing his payments for materials and labor, including payments to Subcontractors as required by Art. 37. *In addition thereto, the Contractor shall submit to the Architect the requisitions of his Subcontractors and such other supporting papers as the Architect may require upon which the Contractor's application for payment is based.*

"If payments are made on valuation of work done, such application shall be submitted at least ten days before each payment falls due, and (if required) the Contractor shall, before the first application, submit to the Architect a schedule of values of the various parts of the work, including quantities aggregating the total sum of the contract divided so as to facilitate the payments to Subcontractors in accordance with Art. 37 (e), made out in such form as the Architect and the Contractor may agree upon, and (if required) supported by such evidence as to its correctness as the Architect may direct. This schedule, when approved by the Architect, shall be used as a basis for certificates of payment, unless it be found to be in error. In applying for payments, the Contractor shall submit a statement based upon this schedule, and (if required) itemized in such form and supported by such evidence as the Architect may direct, showing his right to the payment claimed. *Included in such itemization and evidence to be submitted to the Architect shall be a description of the extent and amount of each Subcontractor's interest in the Contractor's application for payment, together with the requisitions of his Subcontractors for payment, and any other supporting papers as the Architect may require upon which the Contractor's interest in the Contractor's application for payment is based.*

"If payments are made on account of materials delivered and suitably stored at the site, but not incorporated in the work, they shall (if required by the Architect) be conditional upon submission by the Contractor of bills of sale or such other procedure as will establish the Owner's title to such material, or otherwise adequately protect the Owner's interest. *Such payments shall be held by the Contractor in trust until the Architect shall certify that the Owner's title to the materials has been properly established.*"

•

The *Article 32* of the *General Conditions*, which provides when final payment or the retained percentage shall be paid, is also inadequate, in that the proofs required are insufficient and their furnishing is made optional with the Architect. This Article might be amended as follows:

(Words in parentheses are to be eliminated from the article and italicized words are to be added)

"Art. 32. Liens—neither the final payment nor any part of the retained percentage shall become due until the Contractor (if required) shall deliver to the Owner a complete release of all liens arising out of this contract, (or) *and* receipts in full (in lieu thereof) *for all the labor and material furnished on the project*, and (if required in either case) an affidavit that so far as he has knowledge or information the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any Subcontractor refuses to furnish a release or a receipt in full, furnish a bond satisfactory to the Owner, to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the (latter) *Architect determines the Owner* may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee."

•

Control of the Contractor's disposition of payments received from the Owner by the audit of the Contractor's books and records requires personnel to conduct the audit and incurs costs. It should be clearly understood between Owner and Architect that, although the responsibility for the issuance of the Certificates of Payment remains in the Architect, the cost of auditing the Contractor's books and records shall be borne by the Owner and he shall furnish appropriate personnel for that purpose. If the contract between Owner and Contractor provides for audit of the Contractor's books, the contract between Owner and Architect should provide as follows:

"The cost of any audit of the Contractor's books and records shall be paid by the Owner, and the Owner shall furnish appropriate personnel to conduct such audit."

Consideration by Architects, individually and by their societies, of the suggestions contained in this and the preceding articles of this series would result in substantial benefit to the entire building industry, as well as the profession. Information as to the course and result of such consideration would be appreciated.

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by Carl Feiss

out of school

This is the 50th consecutive OUT OF SCHOOL column—and therefore makes some kind of record. For over four years, the P/A Editors have been patient with me and you, my readers, have been equally tolerant—also a record. So ! take this occasion to thank you all for permitting me to indulge my schizophrenia so pleasantly. A number of readers of this column suffer from the misconception that some cloistered hall is sheltering my gray hairs and that I am a bubbling spout in the fountainhead of education. Nothing could be further from the fact. Since January 3, 1950, I have served in the pillared wigwam of the Great White Father in the capacity of CPEBDSCUROAHHFA (the Editors have begged me to refrain from spelling out my title, to save valuable advertising space). In this exalted position, I follow Mr. Pickwick's example and ruminate on the mutability of human affairs. It just happens that the comprehensively trained architect and planner is badly needed in the pursuit of my official professional activities, and taking the long view of the scarce raw material available, I find myself selfishly indulging in a perpetual personal optimism that better education will solve all my problems. In the furtherance of these intimate objectives, I have served for two and a half years as the ineffectual chairman of the ineffectual Committee on Education of the American Institute of Architects. In real life, many architectural designs are rolled across my desk and many millions of taxpayers' dollars require my undivided attention throughout the long working hours of a Washington day. You, my indulgent friends, are the *hors d'oeuvres* to a starving bureaucratic spirit. You are my escape into another world—no less real, no better or worse, but just a little bit different. For permitting this escape, I am grateful.

I suppose that the column should stop now—that if all educational problems have not been solved in the 125,000 words (conservatively estimating) of the

(Continued on page 152)

"Every Dean, Director, or Head of every school of architecture and planning, if he is worth his salt, should be able to convince his students, faculty and alumni that their school is the best in the world. If he does so, it will be."

From the personal diary of the Dean of Architecture and Planning, University of Theleme.

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out of school

(Continued from page 151)

past 50 columns, they won't be in the next 50. The trouble is, I seem to have some words left over. Until either they or your patience are used up, I will continue to indulge my fancy.

•

This particular column should have been published last June or July, because it involves the difficult choices which young men interested in professional education must make in their selection of the schools. I have had several letters, at various times, from young men asking what are the best schools, how to get scholarships, and other difficult but important personal questions. I wish I knew how to give the right answers. Perhaps you would like to see a fairly typical letter, with all the names of specific schools and people deleted:

"*Dear Mr. Feiss:* I have just recently returned from overseas and received my discharge from the Air Force, and I am very interested and anxious to resume my architectural studies. My reason for writing to you I will explain briefly.

"Before entering service I was a student of architecture at a four-year engineering college, totally embracing the Beaux Arts system of educational training, which you so vividly and accurately described in your numerous OUT OF SCHOOL articles. I frankly do not feel I want to return to that school nor that type of architectural training. My being stationed in the East for a short time gave me an opportunity to visit X, Y, and schools of that caliber; and to see their approach to the architect's education. Now that I am preparing to return to school, I too want to make a good choice for the remainder of my educational studies. However, it is rather difficult after being away and out of contact with architectural news and educational trends, etc., properly to evaluate as important a decision as one's school of study. I have given the subject a considerable amount of serious thought and have endeavored, with my limited knowledge of available data, to decide on a future choice of school.

"It is quite true that I have not as yet proved whether I am of the caliber, etc., to some day be a member of the profession; however, I sincerely desire to experience at least an honest effort towards this goal. This is why I have asked for your assistance, Carl (—oops, you will please excuse the informality of first names but I can't help feeling we have architecturally discussed together. One seems to get this impression by reading your warm, friendly, and informative column OUT OF SCHOOL). I feel that on the basis of your writing, teaching, and knowledge of architecture, and its educational schools and curriculums, your opinion would be most qualified and objective.

"If possible, I would be very grateful and appreciative of any ideas, views, and evaluations you might have concerning my request.

"May I again express my sincere gratitude for the many enjoyable hours I have spent lately in reading the back issues of P/A that I'd missed, and especially the very fine articles by one Carl Feiss—really terrific, Carl (—oops, my enthusiasm slipped again). Sure do hope some of the educators find time to read your column too.

"I close in hopes that I will soon be hearing from you.

an anxious and very interested architectural student"

I am ashamed to say that I never even so much as acknowledged the receipt of this letter, partly because I am a stinking correspondent, but more because I hate to fail anyone who puts so much trust in me.

•

There have also been several letters to this column asking about scholarships—where and how to get them. One very

(Continued on page 154)

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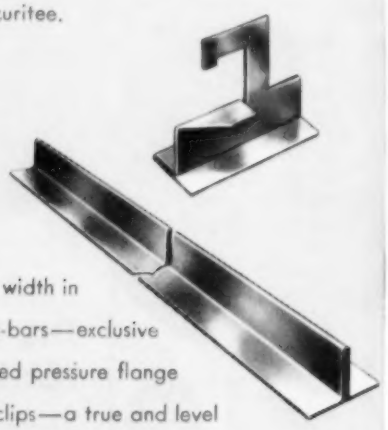

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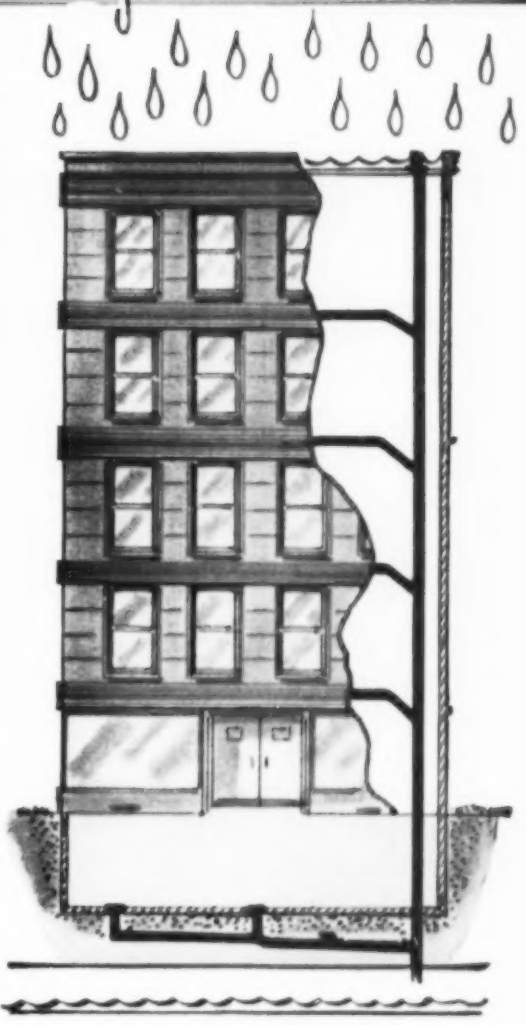

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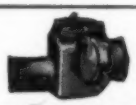

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out of school

(Continued from page 152)

sad one dealt with the problem of a man (married veteran with one child) who had run out of money at the end of his second year; a tuition scholarship, which was all that was available, could not keep him and his family alive; his architectural school was in a small college town offering little employment opportunity, even if his school schedule were to allow the time. It was going to be necessary to quit his obviously beloved career. The school he was attending could no longer help him, and while he had written others, he could find no help from them. I could give him none either.

There are many personal problems involved in the educational starts of every young man and woman. First there is the self-analysis upon which a career decision is based—what am I good for? What am I going to want to do for my whole life? At the ages of 16 or 17, or even 25, these are hard questions for anyone to answer. And at the ages of 50 or 60, there are too often the vain regrets of a mischosen career. Then, unfortunately, for many the choices involve financial problems which may either hamper or cancel a career decision.

•

But let us assume for our purpose here that a choice of career has been made, with or without advice from family or friends, and that the candidate for an architectural education begins looking around. Where should he look first? I would recommend that he write to *Herbert Beckwith, Secretary, The National Architectural Accrediting Board, Massachusetts Institute of Technology, Cambridge, Massachusetts*, for the latest list of Accredited Schools of Architecture. There is a total of 45 of these for the school year 1953-54. This list gives names of schools, places, and first degree granted. I do not know why it does not list the second degree as well.

There is a number of nonaccredited schools of architecture, affiliate members of the Association of Collegiate Schools of Architecture, naturally not mentioned on the list cited above. Some of these latter give excellent training and may receive the accolade of accreditation in the future. Do not be deceived by accreditation. It is important, but it does not guarantee that the particular school will fit you. Find out for yourself what it may mean to you, by asking the head of the schools of your choice. There is a very wide spread of educational techniques, competencies, and attitudes in the list. Also, there is a vast range of size, financial solvency, intellectual freedom, and ratio of student-per-teacher in the accredited schools. In some there are still racial restrictions, although the excellent architectural school at Howard University has a successful nonsegregation policy. And the degree titles are

(Continued on page 156)

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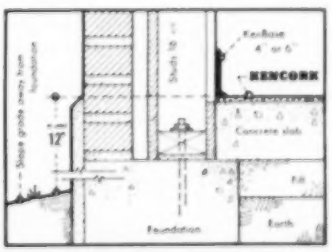

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out of school

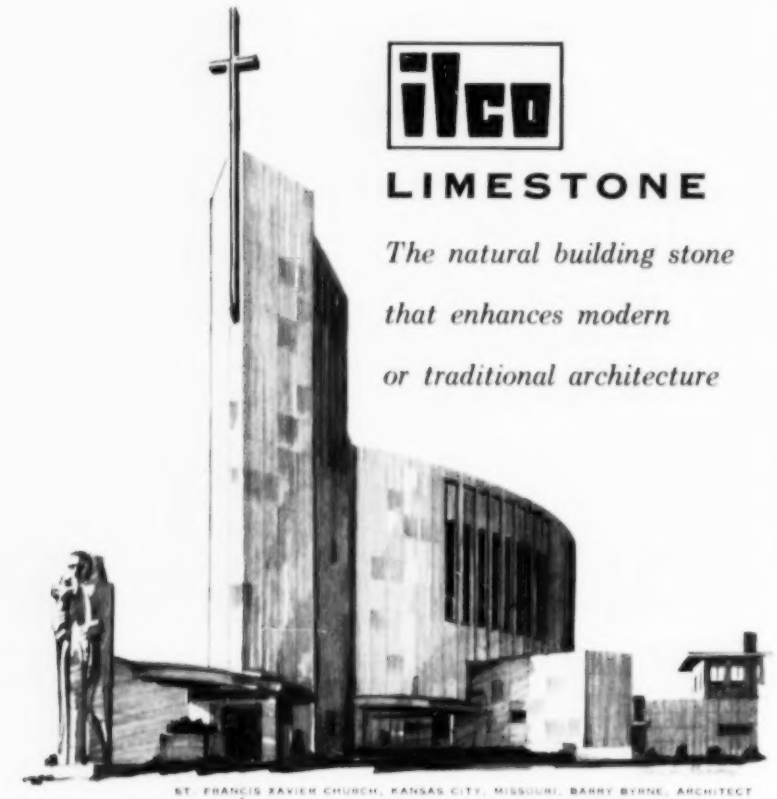
(Continued from page 154)

often curious and difficult to understand. In the accredited school list, for instance, you will find that the Princeton School of Architecture grants a *Master of Fine Arts in Architecture,* while the Rhode Island School of Design grants a *Bachelor of Science in Architecture.* Kansas State College grants a *Bachelor of Architecture,* and the University of Kansas grants a *Bachelor of Science in Architecture.* Darned if I know what the difference in the end product is! They are all accredited schools.

When you shop around the schools for catalogues, and whether you interview the deans directly, be sure to ask a few carefully chosen questions. Architecture cannot be taught wholesale. It requires personal attention and guidance. Every prospective student should know the ratio of students to design faculty; and he has the right to ask for facts on such a ratio as it relates to all years. He also has the right to ask for an estimate of the number of hours or minutes per week during which he can expect to receive personal attention of design and construction faculty. This is *very* important, because many students have been fooled by a big name attached to a faculty, only to find after several disappointing years that Mr. Big takes time off from his practice to appear only for one hour four times a month—and then devotes his attention only to a carefully selected small group of the most brilliant advanced students. The rest get along as best they can.

There are no dispassionate judges of the merits and demerits of the architectural or planning schools. Heaven knows I'm lousy with prejudices and would be the worst person in the world to advise a young hopeful. And most architects are blindly loyal to their beloved Mothers, even though they may not have visited the old campus for 20 years and don't approve of trends, whatever they may be. Further, there are no unprejudiced educators. When interviewing a prospective cash customer, they wipe the drool from their lips and look cool and businesslike. But the fact is, since there are no entrance exams to architectural and planning schools (and I know of no schools testing aptitudes and skills or putting prospective students through guidance or counseling clinics) the average school knows as little about the new student as that student does about the school. Between you and me, it is about as slap happy a method of determining how to spend four or five precious years as I can think of. And don't come to the AIA, the Association of Collegiate Schools, the Accrediting Board, or me, for advice. We are timid people and even if we weren't, we would have to know a great deal about you before we would feel free to give such advice.

(Continued on page 158)



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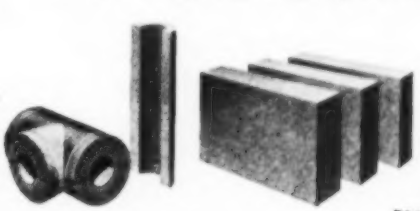

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out of school

(Continued from page 156)

One of the difficulties in the whole picture is that high-school career counselors do not know what architecture and planning are. There are no really adequate architectural career bulletins in the United States. A good one, but too British for our use, was published in 1951 as a practical handbook for architectural students in England. It is *Architecture as a Career* by Marice E. Taylor (Iliffe & Sons, London). We have nothing like it here, and the AIA or any of the four national architectural educational organizations should have had something out long ago. But even a career bulletin cannot advise about the merits of the respective schools.

Schools are like human beings; they change in strength, usefulness, and intelligence from year to year. The rates of change vary greatly and in some the menopause comes early and lasts a long time. It has been my hobby since January, 1950, to watch and study the schools of architecture and of planning as dispassionately as possible. I have visited many, lectured at several, and count among my friends many school educators and administrators. I have seen deans come and go overnight, quarrels and dissension tear schools apart and pull them together. I have seen some schools placidly stew in their juices for years, and others develop astonishing dynamics in a fortnight, without changing their faculty. Changes are occurring constantly. For instance, within the last three years, there has been a new dean or head of school at Harvard, Yale, Princeton, Pennsylvania, Texas (Austin), Tulane, Alabama Polytechnic, Western Reserve, Washington (St. Louis), and a number of others. And several changes are pending in more schools this coming year.

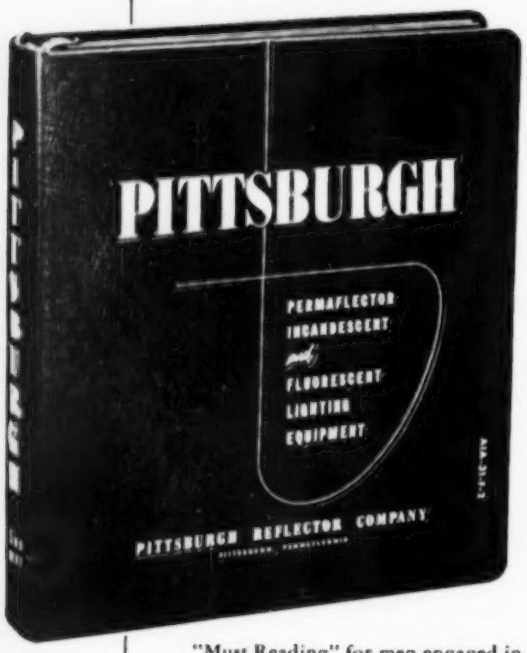
The candidate for an education faces a baffling situation. Should he gamble on the uncertainties of administrative and curricular changes inherent in any new and untried leadership? Should he try where there has been no apparent upheaval or undercurrent? I use the word "apparent" advisedly. And how does he distinguish between the latter and those schools where no serious problems exist? There are several. One thing is clear: one head of a midwestern school told me that he had students from 28 states and while there may be a weighting of a local or regional nature, most schools today are of highly cosmopolitan composition. That is all to the good, of course.

•

The Dean of Architecture and Planning at Theleme was showing me his personal diary, the last time I visited the school. I copied the quote at the head of this month's column with his permission. He told me that since I'd been writing up

(Continued on page 160)

the comprehensive handbook



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out of school

(Continued from page 158)

Theleme in this column he had been getting a lot of inquiries about the school. Since most of the boys didn't know what to ask about and the catalogue, being of a standard type, is dull, cryptic, and academic, the dean had jotted down in his diary the following notes:

"Sept. 10, 1953: Dear Diary, here are a few of the kinds of questions which a candidate for admission to Theleme should be asking me about the school. I don't look forward to their answering, but in all honesty I should try:

"(1) Is Theleme a really good school? What kind of architects has it turned out to prove it? If the school is not accredited, why isn't it?

"(2) How much time and attention will I get from the Design faculty, construction faculty, etc.? Are classes overcrowded?

"(3) Will I have a chance to get to know the faculty? Is there a solid rapport between students and teachers?

"(4) Do the students have a say in their own training programs? Should they?

"(5) Will my abilities and progress be checked from time to time so that I will know how well I am doing?

"(6) What will it cost to go to school? Where will I live? Costs include books, drafting materials, other charges.

"(7) Will I have a counselor of my own to whom I can go when puzzled or in trouble?

"(8) Can I get help for part-time and summer jobs? Is there a placement service?

"(9) Is Theleme adequately equipped with a library, well lighted drafting rooms, testing and materials labs, and other necessary prerequisites?

"(10) Do students have their own organization and can they invite outsiders to visit with and speak to them without too much faculty or alumni censorship? (What is "too much"?)

"(11) Can you give me assurance that the faculty will remain reasonably constant during my stay? I know that this is hard to do, but it would be helpful to know if there is expected to be a big turnover.

"(12) Finally, most important of all, what are the principles and objectives of the school—and are you training architects or comprehensive architects?

"Dear Diary, if I can answer such questions honestly, I may be of help to these poor, benighted sons-of-guns who have to shop around among 45 schools and who, properly speaking, should ask this kind of question of all 45 deans. And the Good Lord only knows where the candidates should go for help in interpreting the answers they get. But they should ask and not just follow the loudest and flashiest barkers in the whole damn circus. It's a free country, boys, and you're on your own, and I suppose a 'system' that was good enough for Grandpaw still is."

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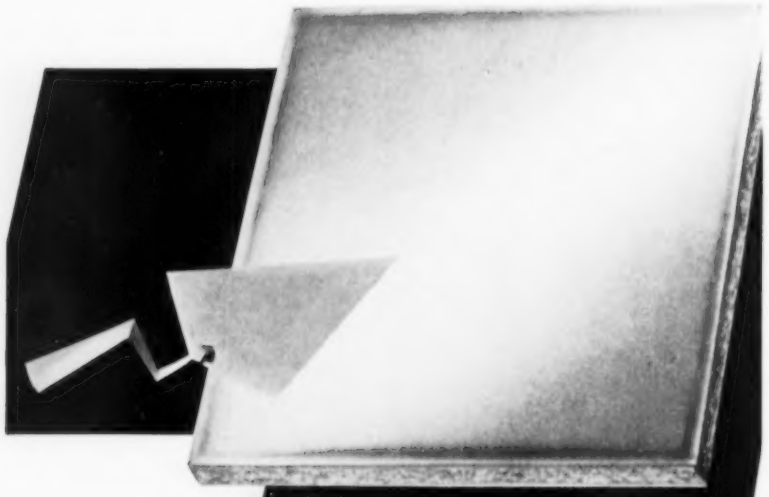

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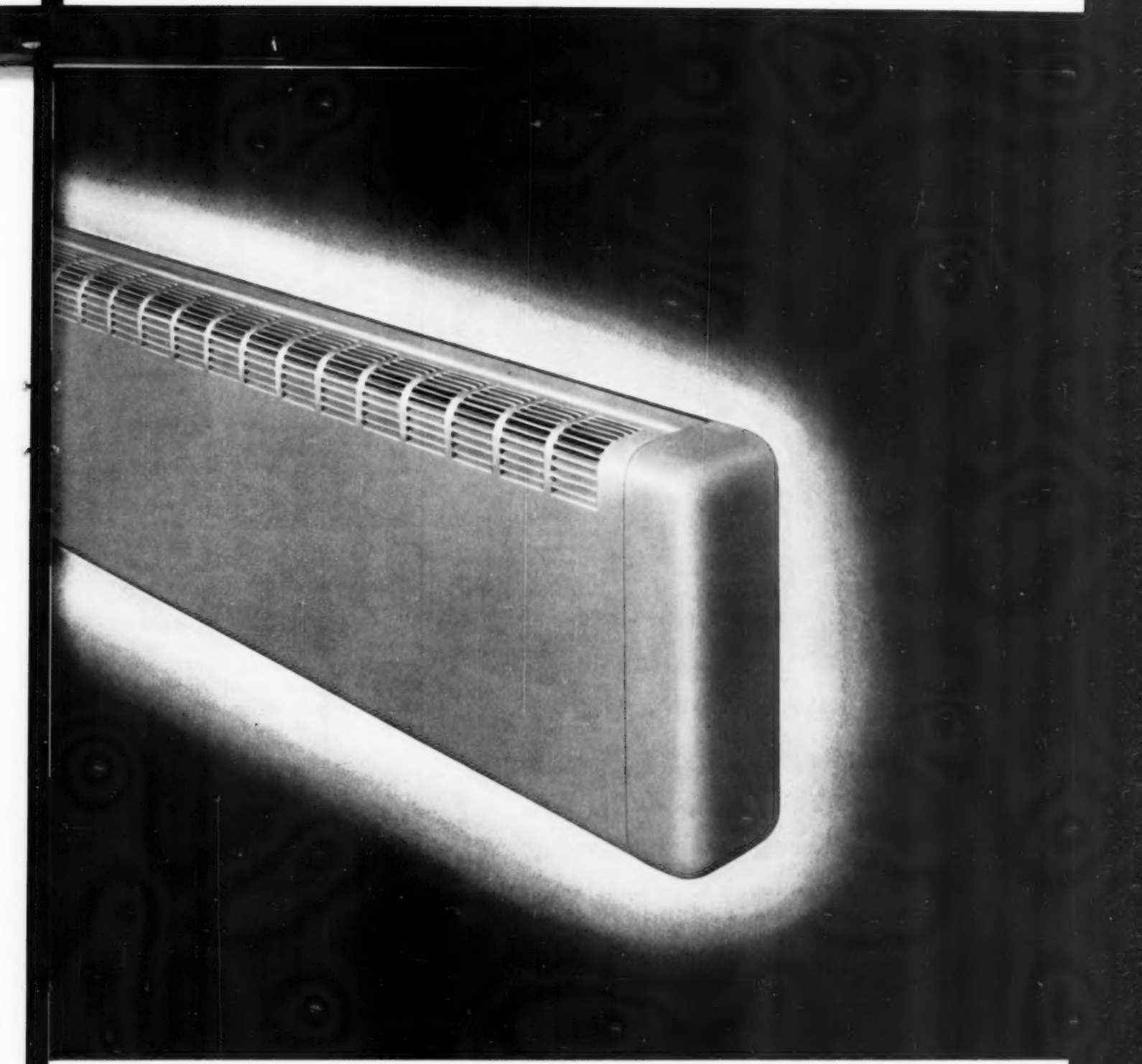

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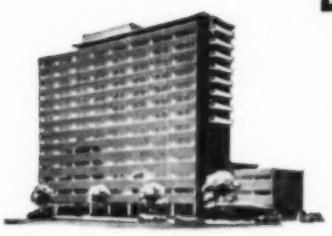

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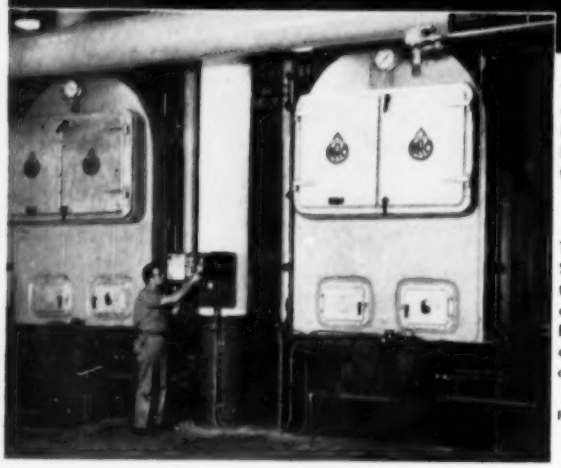

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Photos by Ezra Stoller

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For full details on National Commercial Steel Boilers write for Bulletin 507A-11-PA

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p/a reviews

for the first time—facts

Housebuilding in Transition. *Sherman J. Meisel. University of California Press, Berkeley 4, Calif. 1953. 390 pp. $5*

Housebuilding is one of the country's major industries, however you judge it. In terms of dollar volume, employment, contribution to the nation's wealth, and proportion of family income spent on it, housebuilding is one of our most important industries. So important, that many economists believe that it has a major effect on the status of the national economy.

Yet there is an almost complete lack of factual data about the industry: less is known about housebuilding than about any other major industry. Nevertheless, much has been written on the subject and some unfounded statements have been repeated so often that they have come to be generally accepted as true. Such myths and dogmas are characteristic of a field in which there is a dearth of facts.

The purpose of this book is to remedy this situation, at least for one area of the country. Under the joint sponsorship of the HHFA and the bureau of Business & Economic Research of the University of California, the author set out in 1949 to collect all of the facts on the housebuilding industry in the San Francisco Bay region. With the facts in hand, the next step was to judge the performance of the industry in comparison with other industries. In both sections of the work, the author takes pains to measure prevailing fictions, beliefs, and hypotheses against the facts.

The result is that we now have, for the first time, a description of the structure and operations of the housebuilding industry based on reliable statistics. This in turn makes it possible to analyze and evaluate the performance of the industry with some relation to reality.

Although the study was confined to a single region, the author has related the region to the national scene, wherever possible, carefully noting any respect in

(Continued on page 164)

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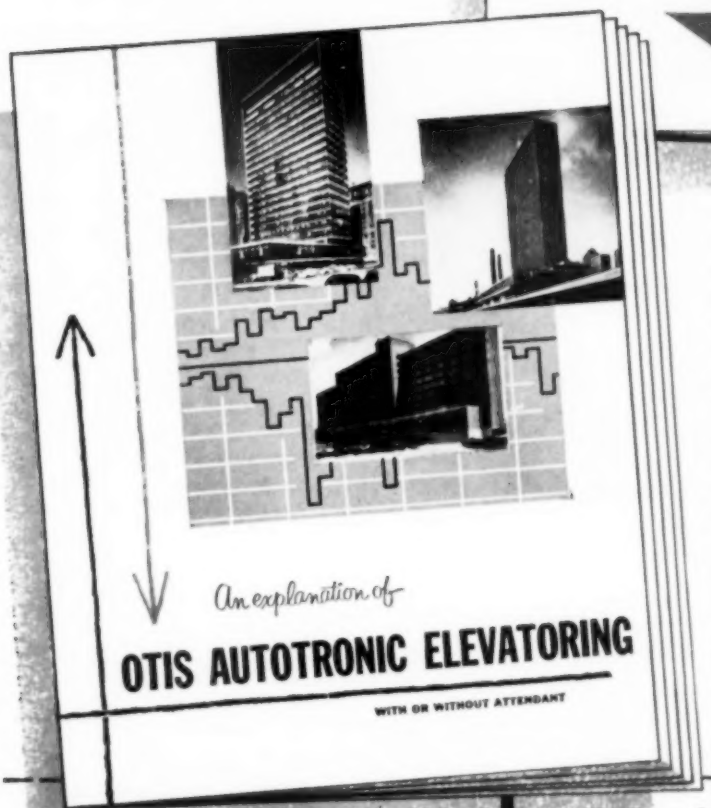

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reviews

(Continued from page 162)

which the study area differed markedly from the rest of the country. The San Francisco Bay region is shown to be surprisingly typical of the 49 metropolitan areas of the country.

The first task was to establish the fact that a housebuilding industry exists, since one of the common myths held that housebuilding was not separable from the general construction industry. This study demonstrates that, on the contrary, there is remarkably little overlapping between the two: 95% of the houses were built by firms whose major business was housebuilding.

The author classifies builders according to the number of houses built per year: 0-24, 25-99, 100 and over. In 1949-50, the period studied, big firms made up only 2% of the builders, but they produced 35% of the houses. Large and medium sized firms together were only 7% of the builders but produced 55% of the houses. A detailed account is given of exactly how the builders in each size group are organized and how they operate, with emphasis on the differences that result from size. This is followed by an equally detailed study of the "sources of supply": materials, labor, subcontractors, financing, government approvals, and permits.

Efficiency increases with the size of the firm. Although overhead goes up, direct costs go down much more. In a noncompetitive period such as the one studied, this improved efficiency resulted in higher profits rather than lower sales prices. However, the average profit of 10% on sales was far lower than in many other industries.

A long list of "restraints" that have been alleged to add at least 40% to the cost of houses, is carefully examined in the light of the facts. It is shown that many of these restraints either do not exist or are of little significance. The author concludes that the maximum amount added by *all* restraints is 7%.

In summarizing the performance of the industry, the author commends it for low sales costs, breath of market (70% of the population), low overhead and profit, and

(Continued on page 166)

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reviews

(Continued from page 164)

extraordinary flexibility. The industry expanded 550% between 1944 and 1948; after the biggest year in its history in 1949, it expanded 40% more in 1950, an accomplishment that few heavy industries have equalled, even under wartime pressures.

Foremost among the deficiencies of the industry is poor design. This is not news to architects, of course, but it is interesting to hear it from a professor of business administration:

"Design influences the production costs, but, perhaps more important, it determines the value of the product."

"Good design is one of the main factors affecting true efficiency."

". . . the amount of value in a given quantity of materials and labor can be augmented. This is familiarly known as increasing the livability. Through better design, the buyer may receive more for his money."

". . . existing appraisal methods" *(of FHA)* ". . . penalize good design by lowering the return to the builder who puts better value in his products."

". . . the product should furnish maximum livability through good design, both in its internal and external arrangements. This means the best possible use of space within the house, the proper location of the house on the site, and the suitable layout of the neighborhood. Second, the product should be designed to facilitate the most efficient methods of construction with the least possible waste of resources. Third, the quality of the house must be such as to permit low maintenance costs and minimum obsolescence."

". . . neither the structure, design, nor the site plan of the average builder utilizes the best techniques . . . the typical large-scale builder's house lags far behind developments in architectural knowledge . . . though some builders have invested in good design and have been able to achieve more livable space at less cost, the average builder still has far to go."

Other industry deficiencies are the lack of technical and market research and poor management—especially in the field of records and controls.

For the future, the author sees no evi-

(Continued on page 168)

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reviews

(Continued from page 166)

dence that a technological revolution is in the offing. He anticipates continued evolutionary progress, an increase in the number of big firms and improvement in the deficiencies noted above. Altogether, these changes might result in a 20% reduction in the price of houses.

Housebuilding in Transition despite its somewhat banal title, is a careful workmanlike study, clearly presented, and fully documented in 10 appendices and 62 tables. The book is well-designed and attractively printed.

JOHN HANCOCK CALLENDER

modern technique

Steel Rigid Frames Manual, Design and Construction. *Martin P. Korn. J. W. Edwards, Inc., Ann Arbor, Mich., 1953. 170 pp., illus., $4.50*

Until recent years the rigid frame of steel was virtually unknown. Its present acceptance was sparked by the coming-of-age of structural welding. In this book the author is an ardent exponent of both.

Essays which are an outgrowth of lectures by the author, and which effectively present his philosophy of rigid-frame design, are followed by brief discussions of welded-plate structures, multispan rigid frames, model analysis, and unit stresses from measured strains. These are written by well-known engineers, with biographical sketches and ample footnotes by the author. To complete Part I, there are derivations of basic equations and design tables for single-span rigid frames of up to 150 ft. in span.

Part II of the book is devoted to a presentation, in photographs and dimensioned drawings, of 10 exemplary rigid-frame structures—coliseums, bridges, and shop buildings—together with, in most cases, a description by the designer and a summary of his assumptions and stress calculations. There are also some 15 pages of photographs of other miscellaneous steel rigid-frame structures.

The book is not a text nor, despite the design tables, is it a handbook. To the architect it can be a manual which balances theory and practice—in the author's words, "a companion with practical experience."

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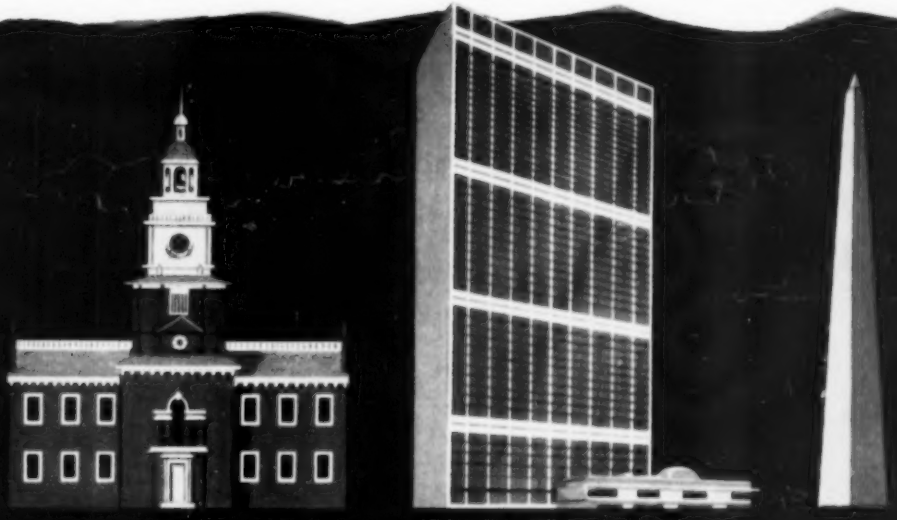

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The United Nations Permanent Headquarters

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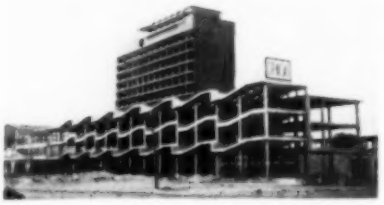
Mexican Critique

(Continued from page 169)

during the rainy season, the light is powerful and unrelieved by trees. During the dry months, there is a merciless brightness from which the native builders protected themselves behind thick walls with small openings. On only one university building, the huge hospital center, an attempt has been made to counteract the glare with louvers—of a fiercely burning red. All the other glass walls rely on the Miesian doctrine that there will always be a curtain.

But the main surprise, amounting almost to shock, comes from the restless scale of the new campus: an unrelated mass of high and low, long and short, vaulted and flat forms. There are huge buildings on thin steel stilts; three-story buildings on massive concrete piers. Pylons that dwarf Luxor cover

large areas, but their huge mass is hollow. The fourth side is missing because they are mere enclosures for playing ball and could have been made of canvas. A grove of lally columns carries no more



than a caterpillar-shaped auditorium. As many as five different wall materials—concrete, glass block, plaster, stainless steel and wood—were used on a single one-story pavillion. This might not be so startling if it were a city setting, but the backdrop of landscape is of monumental quiet and unity. Mexico is today a country of strong socialistic tendencies

(Continued on page 172)

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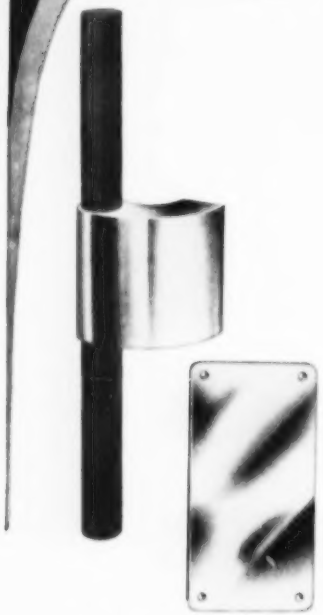

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Mexican Critique

(Continued from page 170)

and was even more so under her President who sponsored the Ciudad Universitaria. A collective effort had a supreme symbolic significance. But even though the State decreed collectivism, the *Zeitgeist* of rampant individuality defeated political theory. In an obsessed search for personal expression, each architect insisted on his own "signature" and the campus is an essay contest in concrete, determining what "Mexican building" means to a dozen different men.

I sat with the most gifted of the contributing architects, in the main quadrangle overlooking a strangely dead and haunted scene. Although they had been constructed with record-breaking speed, these buildings were now weathering unused because there was no money to operate the campus. A public appeal is being made for fifty million pesos to complete the university. The investment in time and money to reach the new campus, situated in one of the most expensive suburbs of Mexico City, from the old student quarters around the Cathedral would be prohibitive. And would there be enough students? A graduate center of these tremendous proportions seems to float precariously in empty space, in a country that does not have compulsory primary education for lack of school buildings and teachers.

There was no pride in the explanatory remarks of the architect who showed me around. He rejected what he and the others had done here, and he protested against the stranglehold of architectural concepts developed in Western Europe and the United States. Like many intelligent Mexicans and South Americans, he was repelled by Western Civilization. He hated the forces—within himself and without—that had compelled him and his colleagues, for the sake of modernism, to place in the heartland of Mexico the narrow-sided Le Corbusier boxes on stilts, the fancy-colored Lever Houses with unusable terraces, the Chicago glass-scrapers, all demanding prohibitive maintenance expenditures. For him, these are monuments of Western Civilization that will still be

(Continued on page 175)

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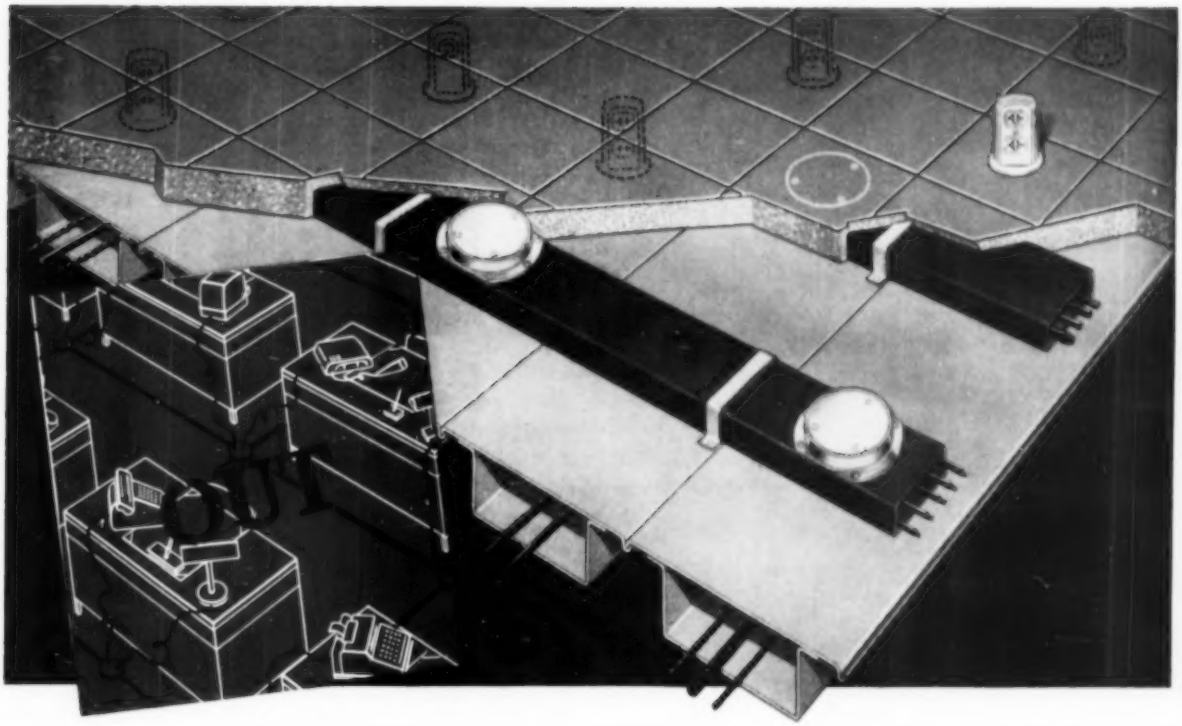

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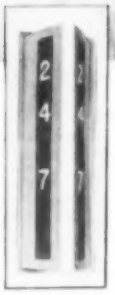

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Mexican Critique

(Continued from page 172)

there long after the civilization has blundered to its own destruction.

There is a frantic desire among Mexicans to dig into the ground that their forefathers so carelessly covered with imported forms, to release the buried spirit that once gave their land an indigenous civilization. But this passionate search into the past has produced no more, so far, than a surfeit of wall decorations. The windowless concrete box of the university library is covered with a continuous mural that leaves not a square inch of the building material free to breathe its own texture. Aztec suns and Christian angels, warriors and saints, classicistic temple façades and pre-Columbian pyramids mingle in a savage tattoo, as if this magic screen might ward off foreign spirits. Socialist symbols and eulogies of Labor unfold like a picture book from wall to wall, and on the ground stone idols glare from their lava beds at the imported building forms.

There is a keen and desperate awareness, in some of those who collaborated on this project, that the attempt to integrate the two incompatible Americas has failed. And they fear that the harsh and uncomfortable proportions will be rejected by the masses whose school this should have been. The architect with whom I talked pointed out that they will search in vain for a connecting link between the indigenous culture that still prevails among the rural population and this, their highest goal, a truly Mexican university.

The deepest and most disturbing lesson taught by the Ciudad Universitaria is the questionable role that contemporary architecture has played, in some instances, away from its birthplace, on both sides of the Atlantic Ocean. The powerful stirring of native impulses all over the earth at this very moment should force upon our architects a re-evaluation of building concepts, in relation to ethnic traditions and needs. Has our generation, in an exuberant realization of technical forms for a technical civilization, stepped carelessly over the subtle and irrepressible demands of populations outside the orbit of technology? It

(Continued on page 176)

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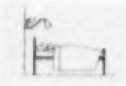
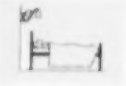
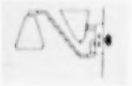


2 *Indirect light for pleasant, home-like illumination.*

3 *Examination light is simply the indirect light tilted downward on its swivel.*



4 *Night light in housing directs fan-shaped beam behind bed.*



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contemporary lighting

Mexican Critique

(Continued from page 175)

is perhaps time for us to learn from the mistakes of too-ardent camp followers that even economic leadership can be much more effective when it respects and encourages the cultural inheritance of peoples. What we call their "backwardness" lies mostly in the fact that their older and wiser philosophies rest upon principles different from our own, that express themselves in different visual forms.

notices

design competition

Parents' Magazine, The Museum of Modern Art, and Creative Playthings, Inc., are cosponsoring a competition for the design of playground equipment that will allow children to exercise their imaginations as well as bodies. Prizes totaling $2000 (plus royalties) will be awarded to the winning designs, to be exhibited at the Museum of Modern Art in June, 1954. Entry blanks may be obtained from Miss Greta Daniel, Museum of Modern Art, 11 West 53rd St., New York, N. Y. Entries may be postmarked not later than January 15, 1954.

mobiles and constructions

The Wadsworth Atheneum, Hartford, Conn., has announced an exhibition of *Mobiles* by Alexander Calder and *Constructions* by Naum Gabo to continue through November 29. The work of these two eminent creative figures has long been acknowledged as an important contribution to the wealth and variety of expression in the visual arts of the last half century. The work shown by Calder in the exhibition is drawn largely from his production of the past ten years and will also include a number of his recent paintings. Gabo will be represented by major works from 1916 to the present, including the first unveiling of his most recent, which is a circular painting designed to move in a clockwise manner.

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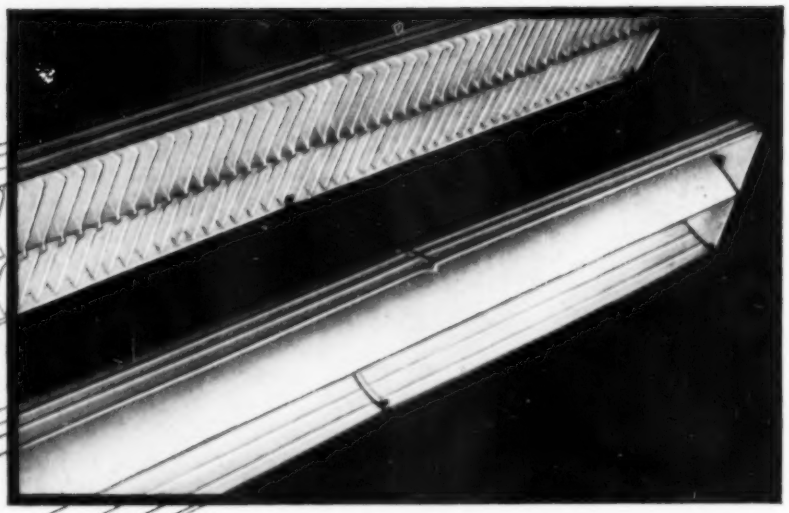

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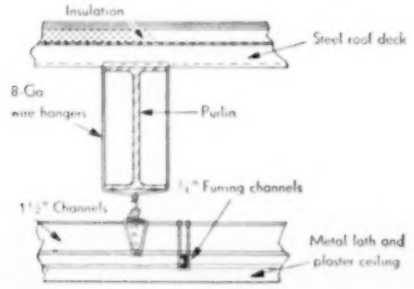
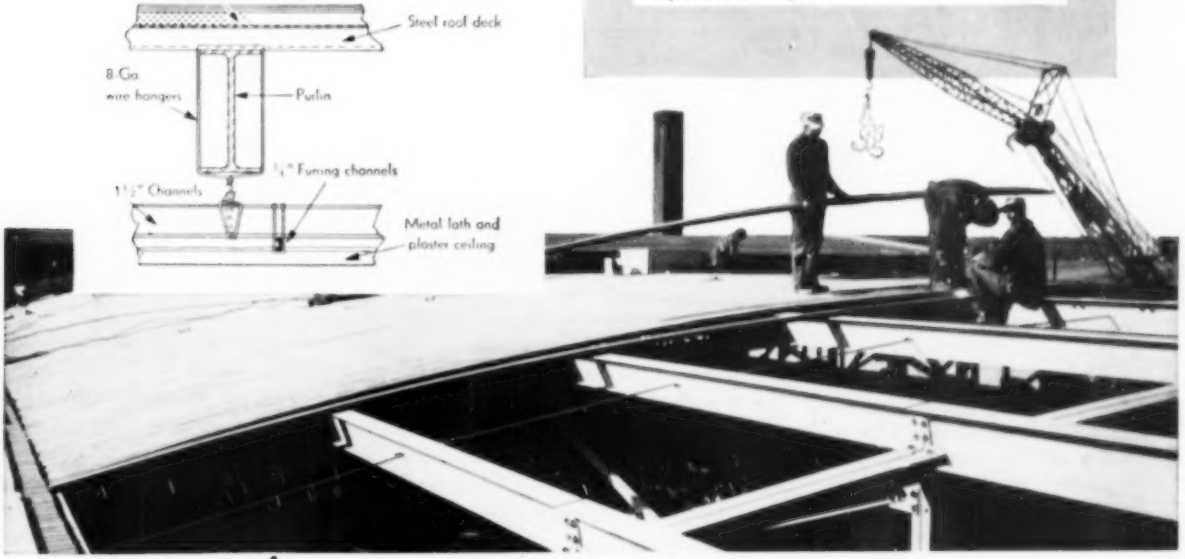
1" insulation board of felted glass fiber	1" gypsum-vermiculite plaster, 100 : 2½ mix	2 hours
1½" wood fiber board insulation	1" gypsum-sanded plaster, 1 : 2 mix	2 hours.
1½" wood fiber and cement binder	⅞" gypsum-sanded plaster, 1 : 2 mix	2 hours
1" wood fiber board insulation	¾" gypsum-sanded plaster, 1 : 2, 1 : 3 mix	1½ hours

*Equivalent insulation permissible.





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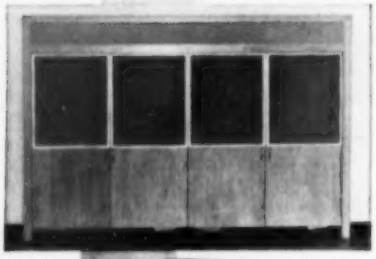

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EQUIPMENT MANUFACTURING COMPANY, INC.

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Einstein College

(Continued from page 114)

In studying precedent for the *planning* of a college of medicine, we were struck with the apparent wastefulness of vacant classrooms and laboratories which were occupied only a portion of the semester hours. Another feature of the typical medical school which was noted is the flow of students between various rooms, necessitated by the single-purpose type of laboratory of classroom, and duplication of the facilities used in common by student body and staff. Finally, we were concerned by the common lack of a "central" or "home" area in which, and from which, the student could concentrate his scholastic activities.

We were determined to reduce uneconomical features to a minimum, and to develop the structural program from a functional point of view. To increase efficiency of space utilization we abandoned the usual concept of separate and individual laboratories for each discipline; instead, we developed two basic sets of laboratories which, related to the occupancy needs of the curriculum, will be more fully utilized than the traditional laboratories. These laboratories will, in addition, provide each student of the first two years with an office-laboratory space which will house his books, microscope, and other scholastic accessories.

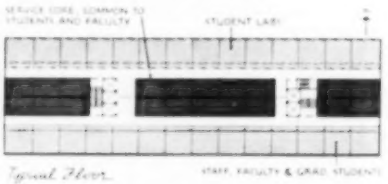
Heavy student traffic will be automatically reduced through the planning of these multipurpose laboratories, and by the method of teaching which will require that the staff circulate to the students, rather than the current practice of the students circulating to the teachers in their individual departments.

To carry out these objectives, the structure was developed on basic, uniform, 20-foot bay spacing, with all non-day-to-day student curriculum spaces in a core in the center of the building, and with utility shafts for laboratory use at each column on the 20-foot module.

The bay spacing of 20 feet allows each bay to accommodate perimeter plus center laboratory benches; one-half the typical bay allows only perimeter bench space. The total area along the exterior perimeter of the structure is cleared for teaching purposes, since stairs, elevators, toilets, and service and utility spaces were deliberately kept within the center of the plan. The utility shafts, on 20-foot centers, will have available within them space for new distributing lines, if and when the need develops.

The orientation was predicated on the following premise: the students will use their facilities mostly in the daytime, whereas the staff and graduates will do research and work regardless of hours of the day; hence, the principal student facilities face north, which provides a natural comfort zone visually and temperature-wise. The major part of staff facilities and graduate student laboratories face directly south, with sun control devices.

The form of the building grew out of the needs for "loft-like" flexibility, compactness, and locating in a central area the facilities used in common by student and staff. These objectives led us to the double-corridor service core, typical floor plan which consists of student facilities on the north side, teachers' and graduate student facilities in the core; the core opens upon two longitudinal corridors which are cross-connected by two centers of vertical circulation (elevators and stairs) at approximately quarter points of the length of the corridors.



The extent of the typical floor was dictated by the needs of a class of approximately 100 students accommodated in groups of 8 per laboratory; this resulted in 14 student laboratories, encumbering one side of a typical floor, with department offices, office-laboratories and facilities used in common taking up the balance of the floor.

The teaching (or student) laboratory constitutes a major departure from precedent. In current practice in medical schools, it is customary for each of the

(Continued on page 182)

REMOTAIRE

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individual-room, remote-type units providing year 'round air conditioning for central plant multi-room installations

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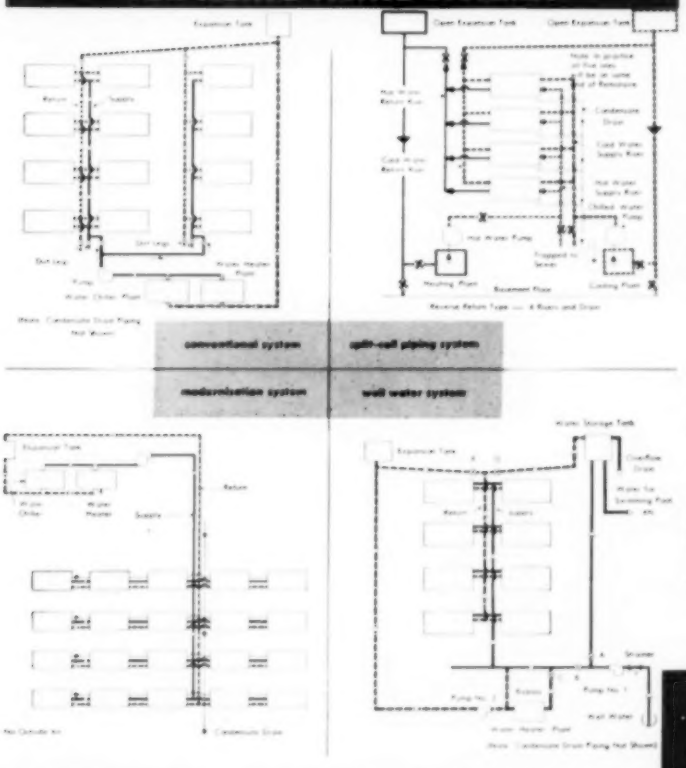

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A Remotaire system is versatile. It can be adapted to the system of air conditioning that is best suited to each building . . . new construction or modernization. Ventilation can be provided in a variety of ways . . . several methods of piping arrangements are possible. Since units can be installed free standing or recessed partially or completely, they afford wide flexibility in architectural planning.

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For further information on the Remotaire see Sweet's Architectural File.

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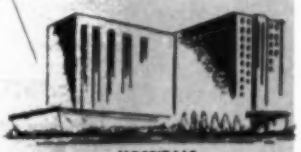
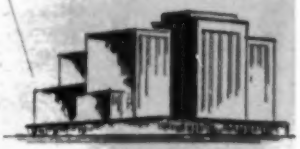


HOSPITALS . . .



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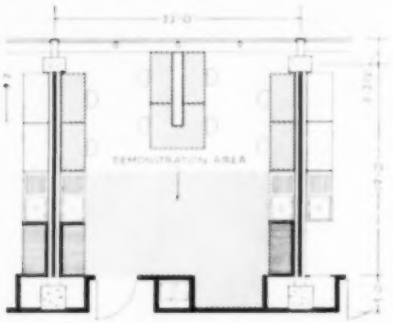
Einstein College

(Continued from page 180)

departments of the first two years to have large student laboratories. Generally, the laboratory instruction occupies only a portion of the academic year, and during the remainder of the time these large laboratories are locked and unused.

This new College of Medicine has been planned to provide an "office-laboratory" for the students of the first two years, each of which will house eight students and will be, in the case of the first-year students, on the same floor as the Department of Pathology, which will be one floor below the Department of Anatomy, and for the second-year students on the same floor as the Department of Microbiology, which will be one floor below the Department of Pathology. With this organization, each member of the first- and second-year classes will have a "home base" which will serve as a place in which he can do his studying.



Typical Students Home Office Lab

In addition to these laboratories, there will be constructed 14 laboratories of a so-called high-bench type, each of which will accommodate 8 students, designed for practical work in biochemistry, biophysics, physiology, and pharmacology. A final set of 10 unit laboratories each accommodating 16 students will provide facilities for dissection work in gross anatomy. These laboratories will be on the same floor as the Department of Anatomy.

This organizational plan allows the faculty to circulate through the students' teaching laboratories; student migration from department to department for the various types of laboratory work is ended, and there is a saving of a great deal of the floor space. The faculty coming to the

(Continued on page 184)

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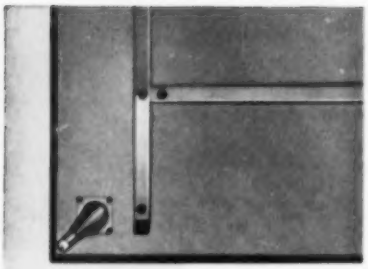

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Einstein College

(Continued from page 182)

student laboratories will permit members of more than one department to participate jointly in laboratory instruction and discussion of particular topics.

In this College of Medicine, space assignments relate to the teaching program; they are susceptible to future reassignment to meet variations of the curriculum which actual experience may dictate; and above all, the new relationships set up between students, faculty, and curriculums in this building should facilitate the development of integrated and correlated instruction in the medical curriculum.

notice

stained glass exhibition

Recognition that stained glass as a decorative medium has neither been widely accepted by the American public nor extensively employed by contemporary artists, prompted AMERICAN FEDERATION OF ARTS and the STAINED GLASS ASSOCIATION OF AMERICA to form a joint committee for the purpose of inviting 18 noted artists to prepare an exhibition, NEW WORK IN STAINED GLASS, which recently opened at the Grace Borgenicht Gallery, New York. The glass panels, representing various styles and techniques, are installed in light boxes specially designed by Rambusch Decorating Studios. The show will tour throughout the United States under auspices of American Federation of Arts. Tentative itinerary is as follows: December 2-23, J. B. Speed Art Museum, Louisville, Ky.; January 4-25, 1954, Arts Club of Chicago, Chicago, Ill.; February 8-March 1, Currier Gallery of Art, Manchester, N. H.; March 15-April 5, Corning Museum of Glass, Corning, N. Y.; April 19-May 1, Rochester, N. Y.; May 24-June 14, Chattanooga Art Association, Chattanooga, Tenn.; September 6-27, Rosicrucian Egyptian Oriental Museum, San Jose, Calif.

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ACA-C35

Capitol Room, Senator Hotel, Salem, Oregon. Architect, Leslie Howell. General Contractor, Viesko & Post. Simpson Certified Acoustical Contractor, R. L. Elfstrom Co., Salem.

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Fireproof Gold Bond Corrugated Asbestone covers this air conditioning duct. Here is another of the many uses of this versatile product.

The clean good-looks of Corrugated Asbestone sheets give a smart, modern appearance to this office. Sheets are easily cut and installed—can be painted for a variety of interesting interior effects.

For a complete list of uses, and specifications, write to Asbestos Architect Service Dept., National Gypsum Company, Buffalo 2, N. Y.

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

Fireproof Wallboards, Decorative Insulation Boards, Lath, Plaster, Lime, Sheathing, Roofing, Siding, Wall Paint, Textures, Rock Wool Insulation, Metal Lath and Sound Control Products.

You'll build or remodel better with Gold Bond

How Honeywell Customized

Temperature Control can help you

Give your clients a better indoor climate

Why Customized Temperature Control is becoming a must for all types of buildings

Just as you often have to guide client thinking when it comes to the sort of building he really needs, today it's also important to make sure he gets proper temperature control.

Many advances have been made in temperature control which may be news to your client.

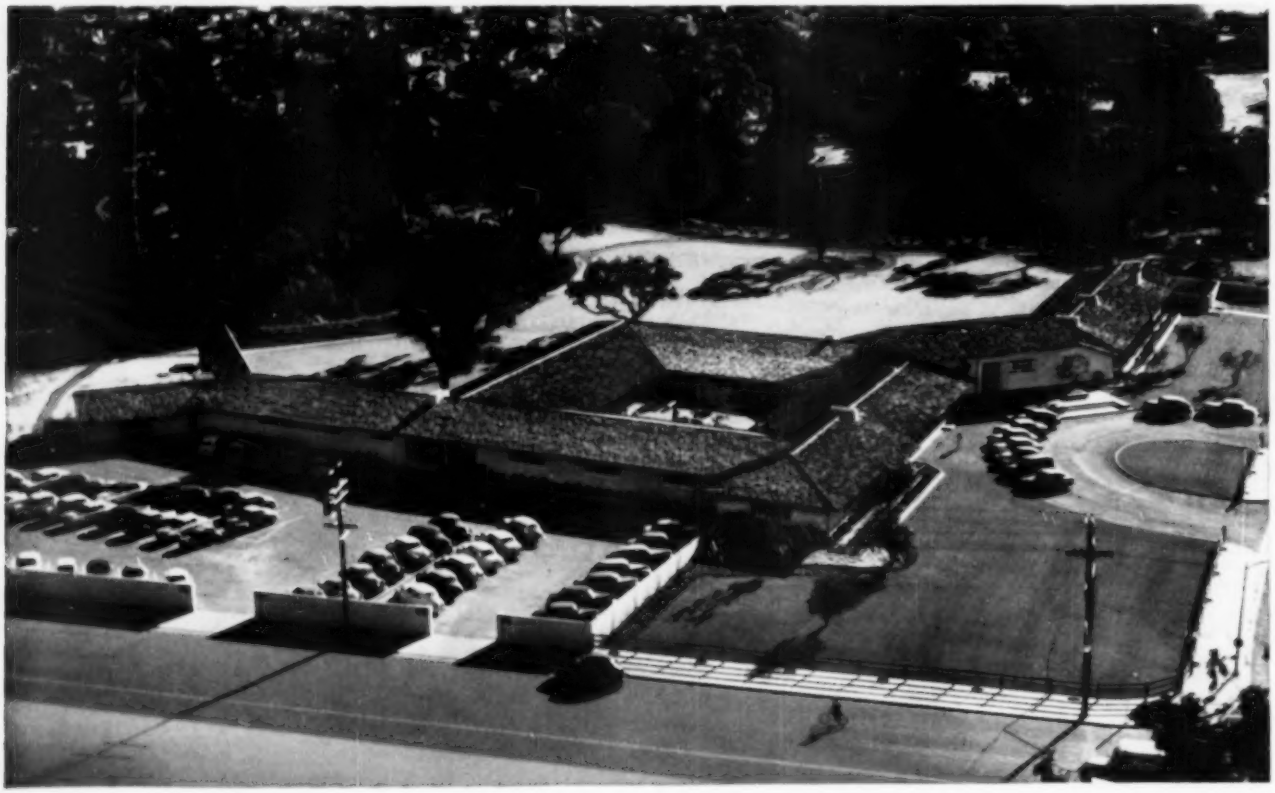
Such an advance is Honeywell Customized Temperature Control.

The key word here is "customized." It means that whatever your clients' control requirements, a Honeywell Customized Temperature Control installation *designed to fit the needs of the building* is your answer. This applies to heating and cooling, ventilation and humidity control, as well as industrial control.

Only Honeywell can provide true "customized" control. Because only Honeywell manufactures all three types of controls – pneumatic, electric and electronic – which often must be integrated in a single building to give you the right performance.

The story, in brief form, of how Honeywell Customized Temperature Control was used to solve specific occupancy, use and exposure problems in Sunset Magazine's "dream home" in Menlo Park, California, is told by the floor plan and the pictures and captions at right.

Sunset Magazine's Publishing Office as seen from the air. Architects: Higgins and Root, San Jose. Design consultant: Cliff May, Los Angeles. Heating contractor: Schlaxel Plumbing Contractors, Inc., Menlo Park, California.



For comfortable, even temperature in new or existing buildings – of any size – use Honeywell Customized Temperature Control

Whether it's an office, motel, airport, hospital, apartment, church, school, factory, store, garage – or any size building – new or existing, Honeywell Customized Temperature Control can help meet your clients' heating, ventilating, air conditioning and industrial control problems.

They'll not only enjoy more comfort and efficiency, they'll save fuel, too.

For full facts on Honeywell Customized Temperature Control, call your local Honeywell office. There are 104 Honeywell offices across the nation. Or mail the coupon today.

L. W. Lane, publisher of "Sunset" says,

"What we wanted was a place where workers confined by four walls could still enjoy the feeling of outdoor living. By providing us with near-perfect indoor climate, Honeywell Customized Temperature Control has contributed much to that enjoyment."

Honeywell Thermostats are giving new meaning to comfort in the headquarters of Sunset Magazine. The view above, including the editorial and advertising offices was taken from the northwest. Two thermostats are needed in this area to compensate for strong southern and western sun.

The thermostat installed in the conference room above, compensates handily for chill that sometimes comes from the large window area, keeps the temperature just right if a conference includes five persons – or twenty-five.

MINNEAPOLIS
Honeywell

First in Controls

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY
Dept. PA-11-218, Minneapolis 8, Minnesota
Gentlemen: I'm interested in learning more about Honeywell Customized Temperature Control.

Name _____

Firm Name _____

Address _____

City _____ *Zone* ____ *State* _____

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World's Leader in Lockers
for the newest features

ONLY BERGER OFFERS KEY-CONTROL STEEL LOCKERS

KEY-CONTROL MEANS *Less* NOISE IN SCHOOL CORRIDORS

Its key is the only handle this revolutionary new school locker requires. Students actually carry locker handles on their key rings. Result: no projecting handles to invite noise. No handle maintenance, either.

With the exclusive Berger Key-Control locker system, door will not open until the key is inserted. Door pre-locks when opened, locks automatically when closed. Key-Control assures *full-time* locked protection of students' books, clothing, equipment and personal effects.

Incorporating famous Berger "three-point" locking mechanism in its fool-proof operation, Key-Control is the latest in the long line of improvements which have made Berger the leader in lockers for every purpose. Your Sweet's File has more details, or write "locker headquarters" for details on the complete Berger line of steel lockers for schools and industry. Remember, only Berger offers handle-free Key-Control Steel Lockers.

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Cabinets for Kitchens • Laboratories • Dispensaries
Shop Equipment • Shelving • Book Shelf Units

BERGER STEEL SCHOOL EQUIPMENT

REPUBLIC STEEL

NOW!

the big New Feature for your 1954 HOMES!

LIVING AREAS! The beauty of this distinctive wall is that it can be rearranged without fuss any way and any time the householder feels like it.

Working Walls of MASONITE PEG-BOARD* PANELS and changeable metal hangers that lock on without tools!

Now sold by building materials dealers everywhere

Here's the exciting new decorative feature that'll sell more homes faster in 1954 and many years more!

You've read about the wonder-working walls of Masonite Peg-Board panels. And so have your prospects. In scores of home-magazine articles, in newspapers, over the radio and on TV, they've learned how attractive a living room can be...how efficient a working area becomes with the aid of these perforated all-wood hardboard panels.

Working walls and partitions of this dense, grainless material will firmly support paintings, books, plants and objets d'art. Homeowner can rearrange them at will, easily, and with no muss or fuss, without defacing the wall. Wide variety of hangers lock into holes (1" on centers), lift off instantly without nails, screws, bolts or any tools.

Like all other Presdwood® Products, Masonite Peg-Board panels are easy to paint and repaint. Won't split, splinter or crack. Resist changes of temperature and humidity. Readily cut and fit into place.

Don't miss this sales winner! Plan now to put Peg-Board panels to work in your next house. For complete information, see your local building materials dealer, or send the coupon now!

better hardboards for better buildings

GARAGE OR WORKSHOP
Peg-Board panels in ¼" thickness can hold an exceptional number of tools, a surprising amount of weight, hundreds of pounds.

CLOSETS AND CUPBOARDS
Space-saving efficiency here. A place for everything and everything in its place. The housewife can rearrange her closet to suit new situations.

KITCHENS, OF COURSE!
Put lazy walls to work in kitchen, bath, child's room, recreation room—anywhere!

*"Peg-Board" Reg. T.M. U.S. Pat. Off. B.B. Butler Mfg. Co., Inc.

MASONITE®
CORPORATION
Dept. PA-11, Box 777, Chicago 90, Ill.

Please send me a complete description of Masonite Peg-Board panels and fixtures and suggestions for their use.

Name.....

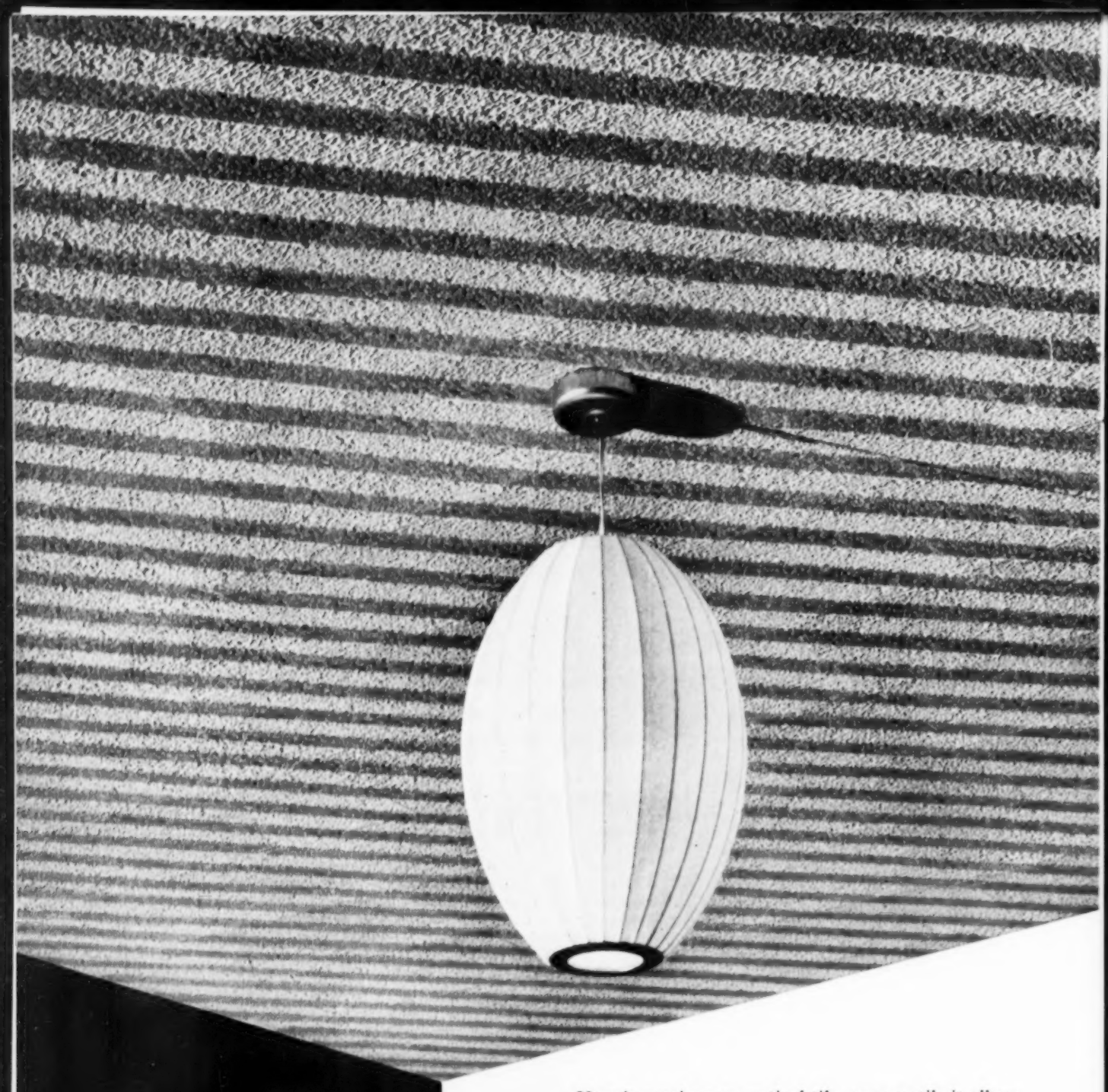
Firm.....

Address.....

City.....*Zone*.....

County.....*State*.....

"Masonite" signifies that Masonite Corporation is the source of the product



Here is a unique acoustical tile, so versatile it allows you to create many unusual ceiling effects from just one pattern. Beautiful in design, rich in texture, highly efficient in sound absorption—Grosgrain has all these qualities and more. And it's just one of many MOTIF'D surface creations in ACOUSTONE—all made by a special patented process, exclusive with U.S.G.—originators of fissured acoustical tile.

UNITED STATES GYPSUM

Introducing

Grosgrain

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new design in

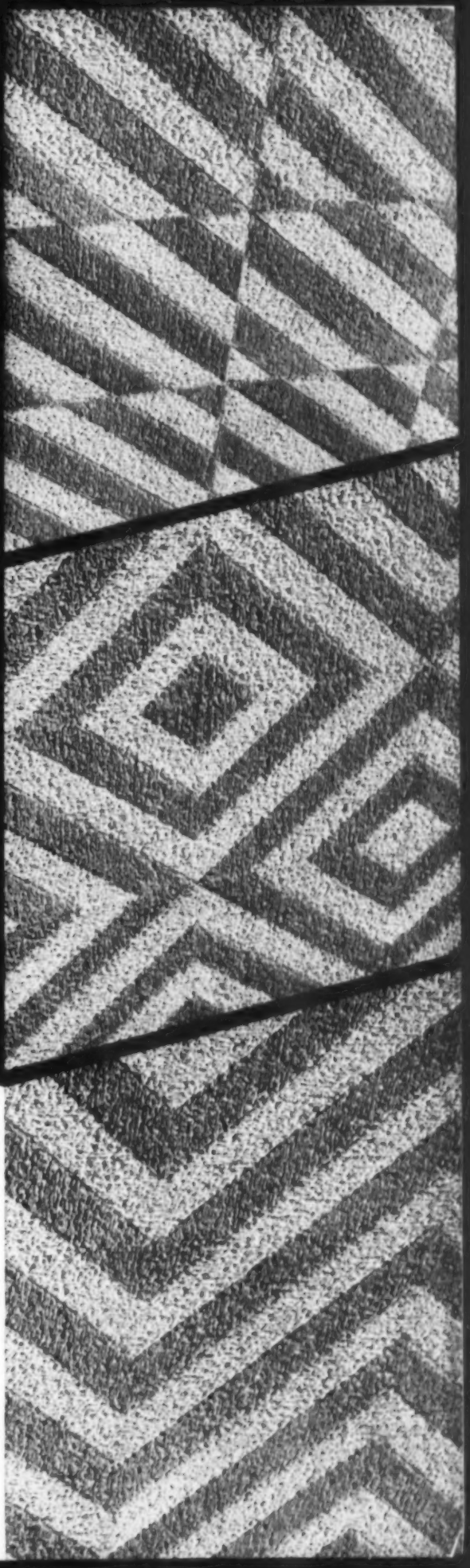
Motif'd Acoustone*

MINERAL ACOUSTICAL TILE

The beautiful

way to quiet

a room



ACOUSTONE is incombustible, has high light reflection—truly the ***beautiful*** way to quiet a room.

SOUND CONTROL IS A JOB FOR EXPERTS

For complete drafting room details, and other information and assistance, contact your nearby ACOUSTONE tile contractor or write United States Gypsum, Dept. 136, Chicago 6.

*T.M. Reg. U.S. Pat. Off.

the greatest name in building

"... the patient must have absolute quiet."

GLYNN-JOHNSON

devices for HOSPITAL ROOM DOORS

G-J 320
Concealed Door Holder—Friction Control
. . . keeps the door stationary, always under control. Prevents idle swinging and slamming. Gentle hand pressure moves the door to desired positions.

G-J 30
Roller Latch
. . . eliminates the annoying click of latch bolts. As the door is closed, the rubber roller contacts the strike and becomes engaged in the strike plate depression—with complete silence.

G-J 64 For Metal Frames
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. . . form pneumatic air pockets when compressed by closed door. This provides exceptional cushioning power to prevent both door noise and latch rattle.

G-J KH-1
Hospital Door Arm Pull
. . . helps nurses and attendants avoid waste motion and unnecessary noise by permitting them to open and close doors with their arms, when their hands are occupied with trays or other articles.

These and many other G-J door devices are today being used on every type of door in thousands of hospitals and institutions throughout the nation, where, in addition to providing complete, efficient, and economical service, they are answering the need for silent performance of duty, expressed by the doctor's caution, *"Above all, the patient must have absolute quiet."*

4844

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Builders' Hardware Specialties for over 30 Years
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Refer to G-J Catalog for complete line of door holders, bumpers, and specialties . . . for all types of doors in public and commercial buildings.

Vina-Lux... Floors That Lighten Chores

This superbly modern flooring brings the miracle of vinyl-asbestos to the modern home . . . lightens chores because it rarely needs hard scrubbing . . . never needs waxing. It brings safer footing, easier walking, because it has a cushioned resiliency that makes it easy on the feet.

Here's a flooring ideal for kitchens, recreation rooms or aay area where food and drink are served. Vina-Lux has built-in resistance to all kinds of greases and oils . . . and to most of the common household products that are often spilled on kitchen floors.

Vina-Lux brings you colors that are new and fresh..colors that will enable you to design interiors that harmonize with the modern homes built today.

When you see Vina-Lux, you'll see for yourself why it's the new wonder floor all America is talking about — its amazing surface alone is enough to convince you. Samples and literature are yours on request.

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MODERN ONE-STORY SCHOOLS

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Economy, speed of construction and adaptability to individual community needs makes wood outstanding for today's modern one-story schools. Wood offers practically unlimited plan and design possibilities. Today's wood trusses and laminated members make possible long post-free spans. An infinite variety of exterior treatments of wood offers interesting and individual effects...make well-designed one-story schools of wood a credit to any community.

When you design one-story schools specify West Coast Woods...Douglas Fir, West Coast Hemlock, Western Red Cedar and Sitka Spruce.

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Send for valuable kit of literature useful in planning and designing modern school buildings. Includes technical data and specifications on latest developments in wood construction. Send coupon below.

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Controlled Light

an integral part of your plans

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Wallbox Dimmer

- Any amount of light from darkness to full brightness
- As easily installed as the ordinary wallswitch
- Economical, cool, silent operation
- Approved by the Underwriters' Laboratories

THE SUPERIOR ELECTRIC CO.
BRISTOL, CONNECTICUT

Now, home lighting keeps pace with the modern design of better living. No longer must lighting be the complete darkness or blinding brilliance offered by the ordinary "on-off" wallswitch. A new concept in light control, the **powerstat** WALLBOX Dimmer replaces the wallswitch to permit the selection of light just right for any occasion and activity. Simply by turning a knob, light is brightened or softened silently and smoothly to reflect every mood, to provide the right amount of light for every seeing task. Here is lighting as it should be, *controlled* from darkness to full brightness to suit the needs of modern living. Plan for the **powerstat** WALLBOX Dimmer in the home you build.

Complete technical information is offered in Bulletin D653WBT.

And for your customers, a simple, non-technical Bulletin D253WBC.

Write to:

THE SUPERIOR ELECTRIC CO.
4113 Demers Avenue, Bristol, Conn.

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QUALITY PANELBOARDS

can save your clients a million minutes an hour

Power outages may be of only a few minutes' duration. But they occur often, unpredictably, and at inconvenient times. Multiplied a thousand-fold every hour in plants, office buildings—everywhere—the penalty is untold waste. The worst of it is, most outages are avoidable or unnecessarily prolonged.

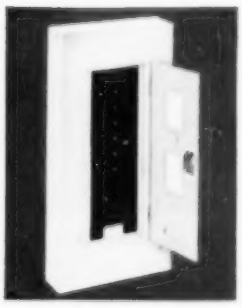
You can give your clients the profit or service protection they look to you for. Westinghouse De-ion® Circuit Breaker Panelboard specifications assure modern electrical capacity and protection.

Quick-make, quick-break circuit breakers ride out temporary or harmless overloads—don't cut power needlessly. They save on maintenance, too—no fuses to replace. Simply a flip of the handle will restore power. Dangers from over- or under-fusing are gone forever.

Westinghouse Panelboards serve in buildings of any size or type, such as shown here. Be sure—specify Westinghouse. And remember, for every new school built today, there are 10 others that need electrical modernization; for every new commercial building, 50 are electrically outdated.

In addition, a Westinghouse specification offers quality panel construction and an engineered job throughout.

For expert assistance, ask for an application engineer. Talk to your Westinghouse Representative about this, or write for B-5260-A, *"Panelboard Planning"*, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-93511



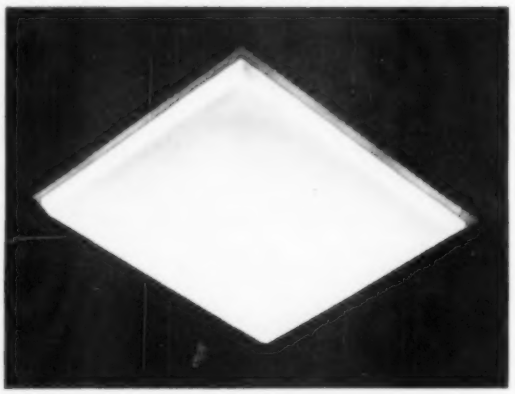
WESTINGHOUSE QUALITY PROTECTS REPUTATIONS, TOO

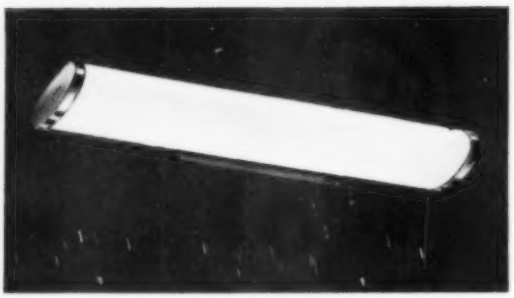
YOU CAN BE **SURE**...IF IT'S

Westinghouse

optiplex

trim, clean lines... even light diffusion





MOLDED PLEXIGLASS DIFFUSERS spread soft, even illumination throughout the area and onto ceiling, relieving unwelcome brightness contrasts.

SMOOTH WHITE SURFACES of fixtures and diffusers provide unobtrusive appearance that blends into ceiling design.

RAPID START TRANSFORMERS light fixtures instantly without flicker. No starters required.

TWIN WIRING CHANNELS and full aluminum reflectors assure full transformer life and maximum lamp output. Diffusers snap in and out with fingertip pressure for easy servicing.

Lightolier Optiplex is available in recessed, surface or stem mounting, single or continuous runs. The adjustable bracket illustrated is available in two sizes for wall or ceiling mounting.

A complete 24 page portfolio, including technical drawings and data on the Optiplex group is available. For your copy, write Lightolier, Inc., Jersey City 5, N. J.

Lighting by **LIGHTOLIER**

JERSEY CITY 5, NEW JERSEY

THE TREND IS TO
AWNING WINDOWS

LUDMAN
Auto-lok
AUTOMATIC LOCKING
WINDOWS
ALUMINUM OR WOOD

Versatility

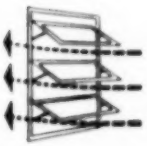
And what amazing versatility! - - Ludman patented Auto-Lok principle of operation makes them close ten times tighter than generally accepted standards. This fact, plus their overall design, gives you, the architect, extraordinary latitude in creating architectural designs that make maximum use of natural light and natural ventilation without sacrificing weather-tightness.

Because they are the tightest closing, they are now being used in more ways, in almost every type building, all over the world. They are being used in industrial, commercial and public buildings - - in schools, hospitals and residential homes as well. Auto-Lok Windows are manufactured with precision and available in many commodity and modular sizes as well as in special sizes.

See our complete catalog in Sweets File or write - -

LUDMAN *Corporation*
DEPT. PA-11
NORTH MIAMI, FLORIDA

WARMER IN WINTER - - Auto-Lok windows SEAL LIKE A REFRIGERATOR . . . have the lowest air infiltration of any window made.



COOLER IN SUMMER - - Draft-free air circulation that can be regulated and directed to make greater use of natural ventilation.

EASIEST TO OPERATE - - Friction-free, precision balanced design utilizes sash weight to make Auto-Lok easiest of all to operate. Roto or Control-Bar operation.

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MITCHELL

LODESTAR

4-FOOT MODELS:
Available in 2 or 4 lamp luminaires, in a complete choice of all lamp types.

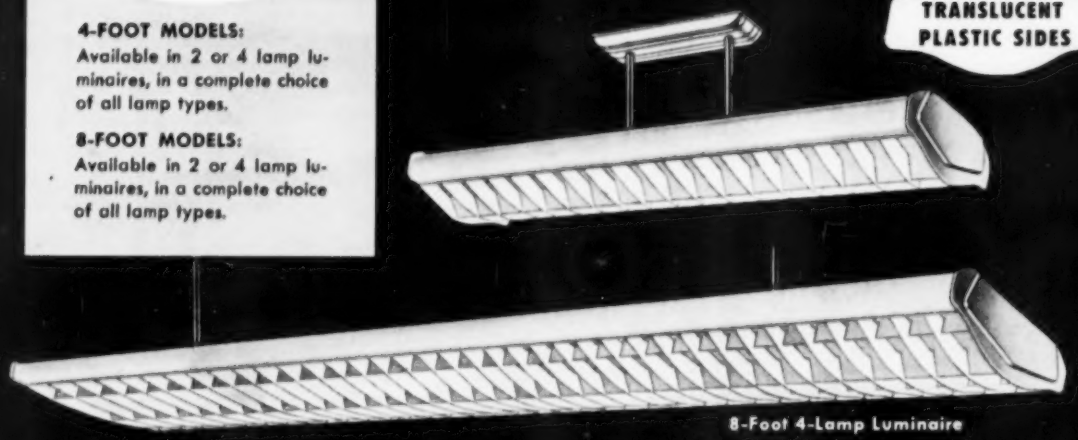
8-FOOT MODELS:
Available in 2 or 4 lamp luminaires, in a complete choice of all lamp types.

the new LOW COST fluorescent luminaire with

UPWARD COMPONENT

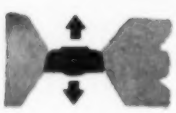
TRIM MODERN APPEARANCE

TRANSLUCENT PLASTIC SIDES



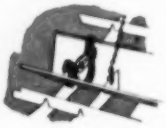
8-Foot 4-Lamp Luminaire

Outstanding lighting advantages and low-cost maintenance



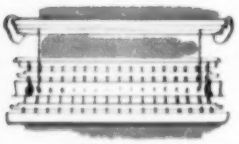
"General Diffuse" type luminaires; approximately half the light goes up to be reflected from ceiling and upper walls for comfortable, glare-free, uniform lighting.

Semi-translucent side panels provide low brightness contrast, creating modern, streamlined appearance. Plastic sides and louver form one easy-to-handle unit.



Sturdy, concealed spring-loaded louver latch instantly releases or engages all-steel louver by snap-in action. Releases with slight pressure of fingers.

MITCHELL engineering achieves remarkable standards of abundant, glare-free illumination in the "LODESTAR" Luminaires. Important lighting advantages are attained by the substantial upward component which provides a "general diffuse" lighting effect. Semi-translucent side panels provide pleasing low brightness contrast. The superior louver design delivers properly shielded illumination to the working area. Smooth styling, unusually low maintenance factor and surprisingly low cost make the new MITCHELL "LODESTAR" Luminaires outstanding values in commercial fluorescent lighting.



Two jack chains suspend entire louver and V-spine assembly from fixture body, making relamping easy and substantially reducing maintenance costs. This feature saves time and money.

New Rapid-Start units offer an unusual advantage: "No starters to replace." Installation of Rapid-Start luminaires slashes maintenance cost by eliminating starter replacement expense.

where quality counts—SPECIFY MITCHELL

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MITCHELL

Mitchell Manufacturing Company, Dept. 5-L
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Send full data on MITCHELL "Lodestar" Luminaires.

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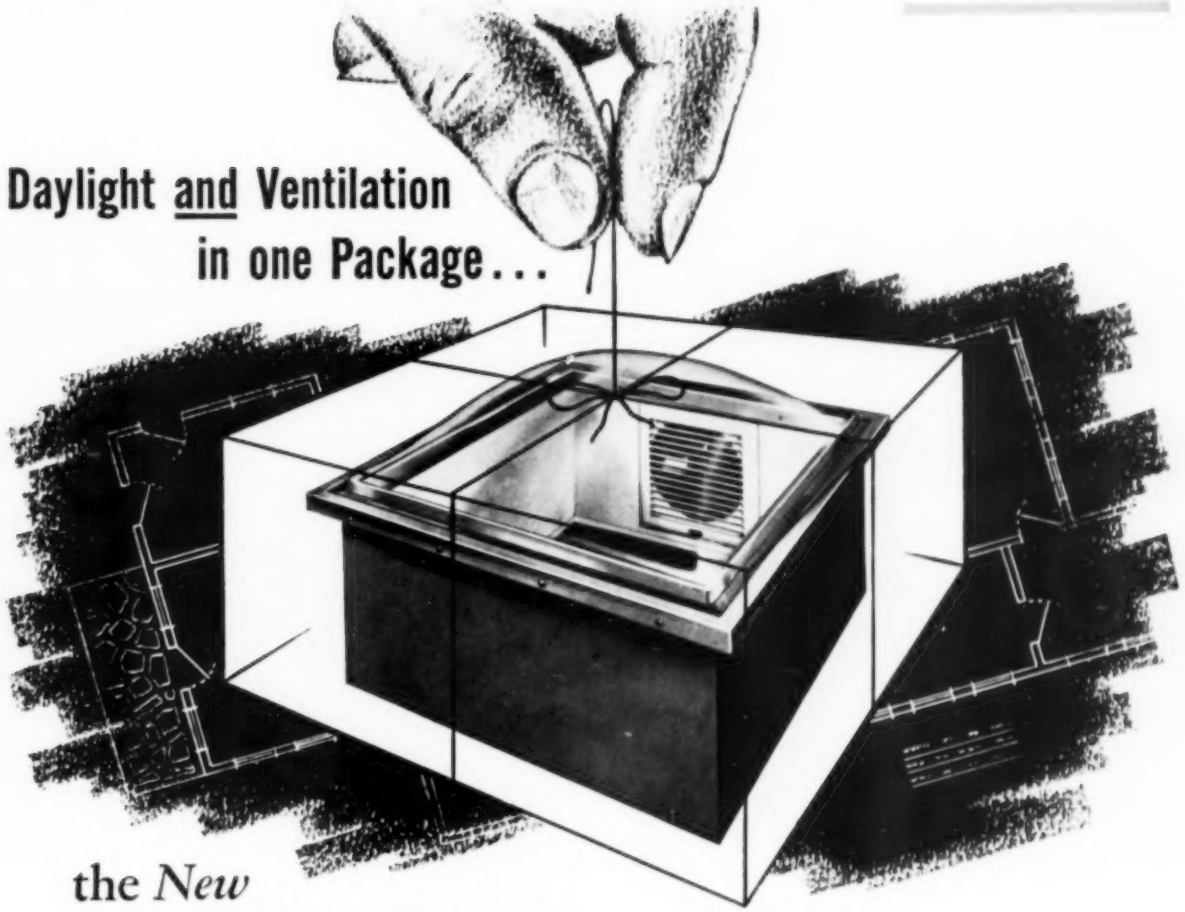
Firm.....

Address.....

City.....Zone.....State.....

ANOTHER WASCO FIRST

Daylight and Ventilation in one Package...



the *New* *Wascolite Ventdome**

put it anywhere in the plan—

Now, for the first time, the superior daylighting of Wascolite Skydomes — with ventilation added! You can revolutionize home, school and plant layouts — yet allow adequate daylighting and air circulation for all interior areas. And all of these radical changes can be planned without designing special roof, curb or flashing construction!

The Wascolite Ventdome — the first and only unit of its kind commercially available — is completely prefabricated. Easily installed over a simple roof opening. The Ventdome consists of an acrylic plastic dome and an insulated curb with built-in ventilating unit — power driven or with adjustable louvers. Available in aluminum, copper or galvanized iron, with domes of clear colorless or white translucent acrylic plastic. Nine standard sizes.

Wascolite Ventdomes are the product of the Wasco Flashing Company — makers of the famous Wascolite Skydome and pioneers in the field of toplighting.

*patent applied for

For further information see Sweet's Catalog or write:

WASCO FLASHING COMPANY

90 Fawcett St., Cambridge 38, Mass.

From the ageless mineral

...ASBESTOS

...comes the smooth-surfaced built-up roof

FLEXSTONE*

which provides a flexible covering of stone...

Because they are made of the mineral, asbestos, the felts of a Johns-Manville Flexstone Built-Up Roof assure lasting service and protection. They will not support combustion. They effectively resist the drying out action of the sun . . . won't rot, are weatherproof and need no periodic coating.

Flexstone Built-Up Roofs are smooth-surfaced . . . permit thorough drainage . . . make damage easy to locate and repair. These superior advantages are also provided by the J-M Flexstone Special Built-Up Roof . . . developed especially for dead-level decks.

For complete information about Flexstone Roofs and the J-M Asbestile* Flashing System that provides thorough water tightness and effective treatment for critical roof areas, send for folder BU-51A. Write Johns-Manville, Box 158, New York 16, N.Y. In Canada, write 199 Bay St., Toronto 1, Ontario.

*Reg. U. S. Pat. Off.

Johns-Manville FLEXSTONE Built-Up Roofs

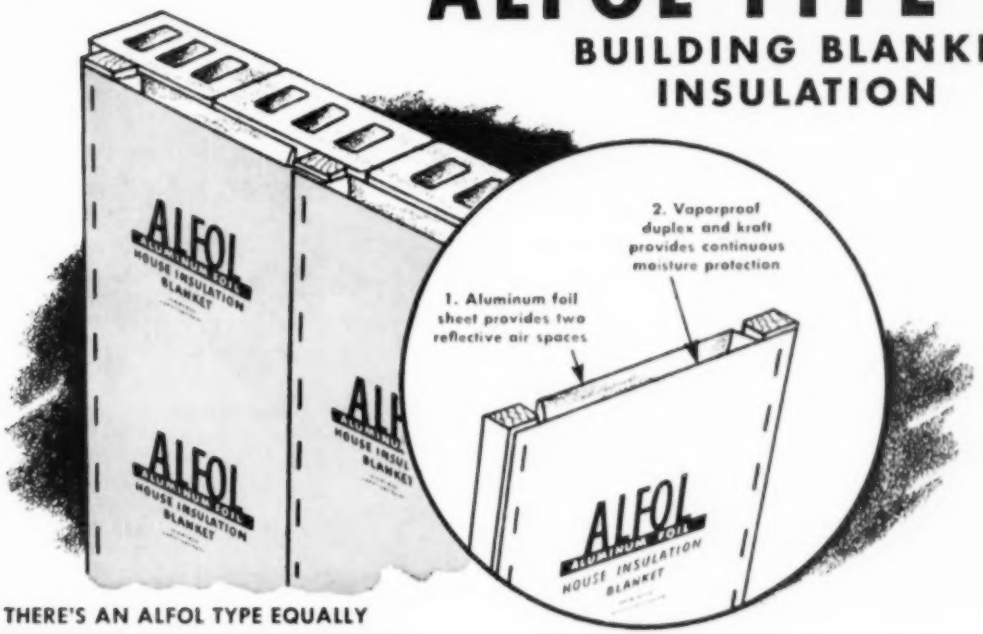
ASBESTOS CORRUGATED TRANSITE* • ACOUSTICAL CEILINGS

DECORATIVE FLOORS • MOVABLE WALLS • ETC.

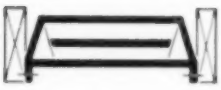
Over an inch of Insulating Efficiency plus a positive vapor barrier—all in the 7/8 inch space of a furred out Masonry Wall!

ALFOL TYPE 1A

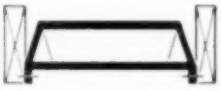
BUILDING BLANKET INSULATION


ALFOL
ALUMINUM FOIL
HOUSE INSULATION
BLANKET
2. Vaporproof duplex and kraft provides continuous moisture protection
1. Aluminum foil sheet provides two reflective air spaces

THERE'S AN ALFOL TYPE EQUALLY EFFICIENT FOR EVERY INSULATION NEED



ALFOL Type IV—Four reflective air spaces for the utmost in thermal efficiency.



ALFOL Type III—Three reflective air spaces—ideal for crawl spaces, unfinished ceilings.

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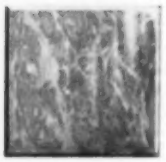

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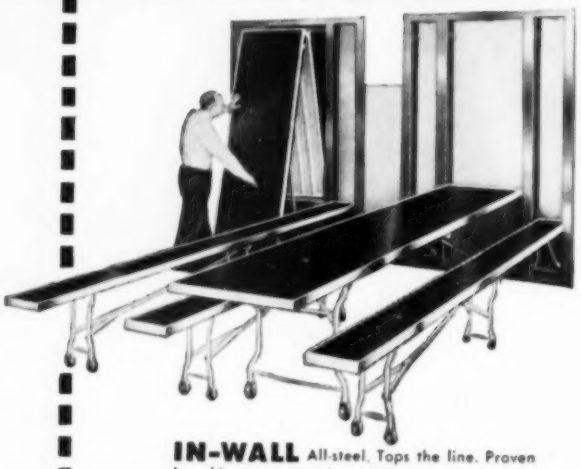

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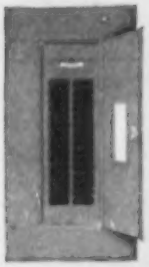

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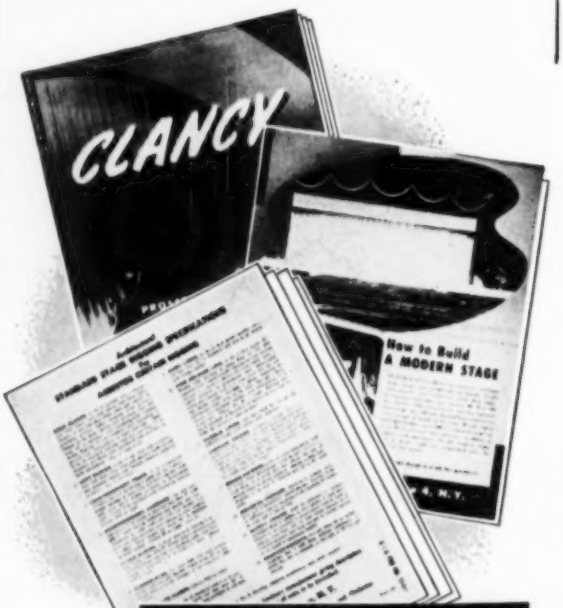

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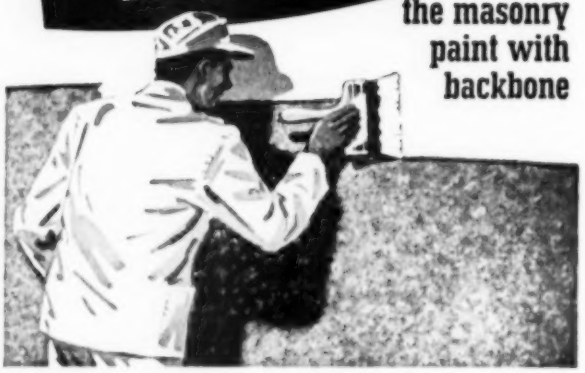

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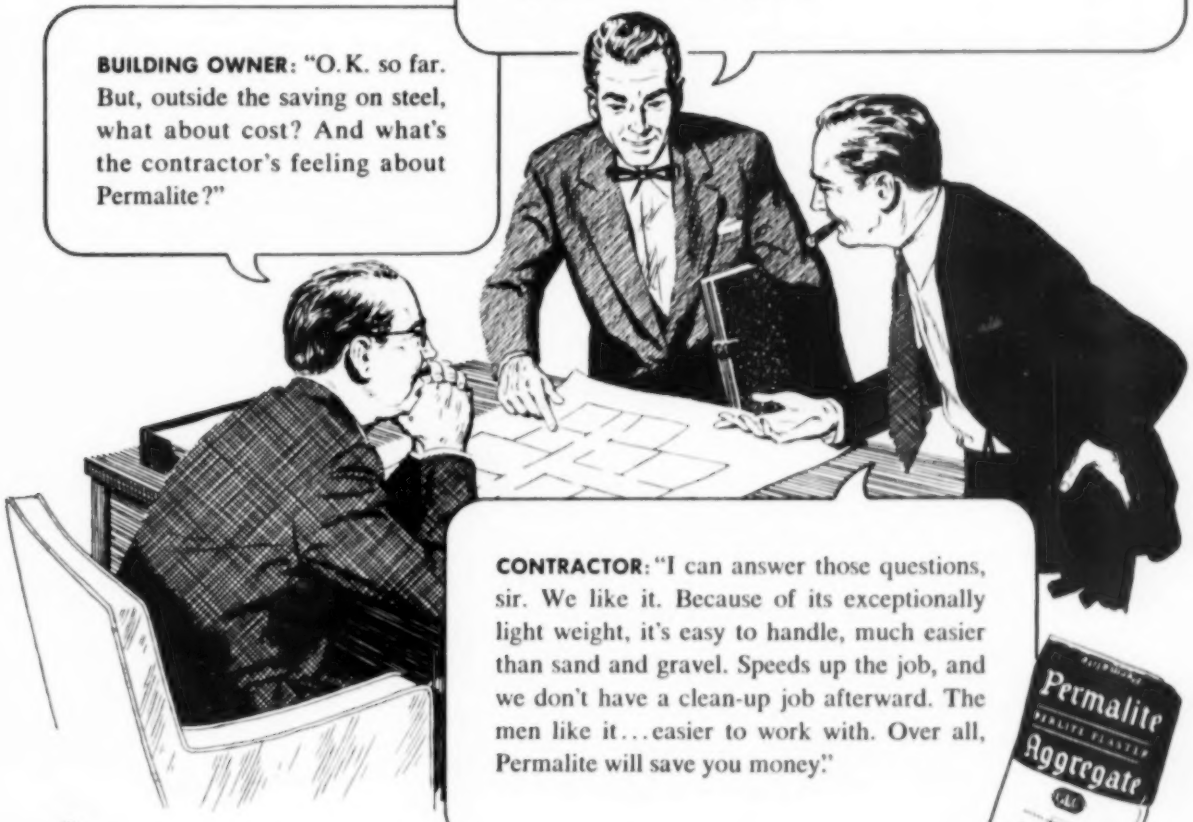

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Sharp, clean threads of "Xduct" rigid steel conduit are machined before galvanizing to assure complete protection from end to end. The result: every hill and valley of threads are completely galvanized.

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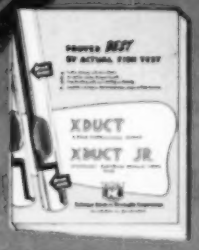
"Xduct's" silvery color is highly acceptable for installation in exposed locations.

Fishing is easy with "Xduct" Conduit— Proved best by actual fish test!



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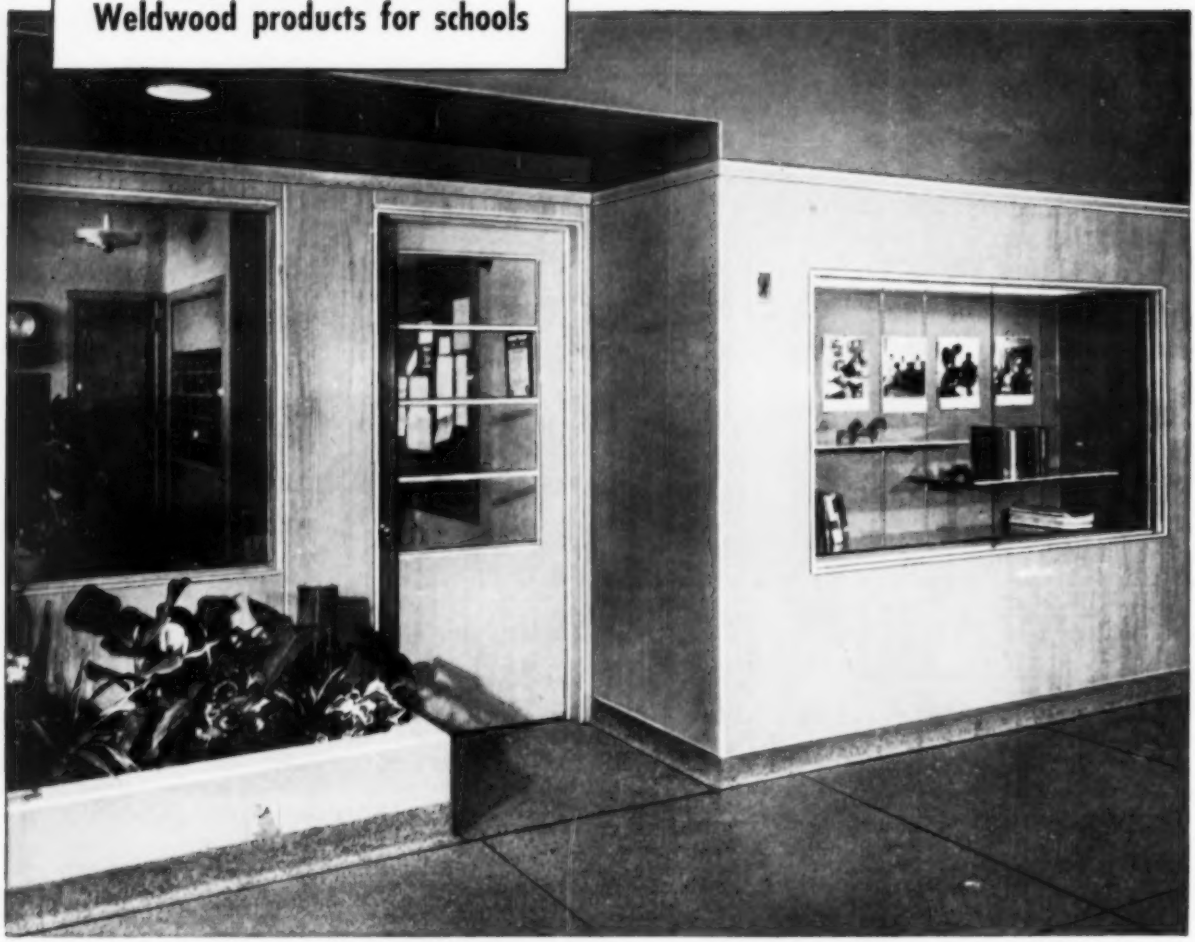
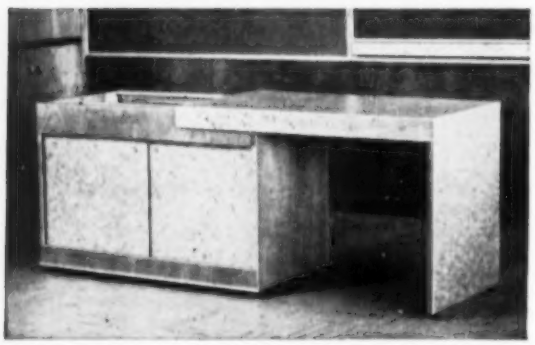
Why architects specify Weldwood products for schools



RED OAK WELDWOOD paneling in the main entrance hall of new Midland School, Rye, New York. Architect: Emilio di Rienzo. Gen. Contr: Peter A. Camilli & Sons.

Low first cost, low maintenance,



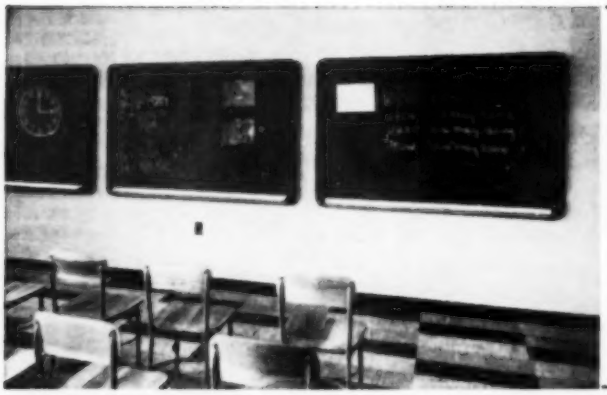
TEACHER'S DESK and movable storage cabinet in each classroom of the Foster A. Begg School in Manhattan Beach, California. Made of Novoply, this desk is a compact unit 3 feet and 11 inches long—can be telescoped an additional 2 feet 7 inches to provide working space 6½ feet long. Architects: Daniel, Mann, and Johnson & Mendenhall.

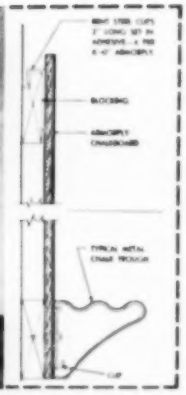
More imaginative and functional school designs are now possible with Weldwood products.

Designers of new schools and modernizers of older ones have discovered that lower building and maintenance costs need not be dependent on drab, institutional designs. A variety of Weldwood products now makes possible a fresh, functional approach designed to aid the pupil without increasing the burden of the taxpayer.

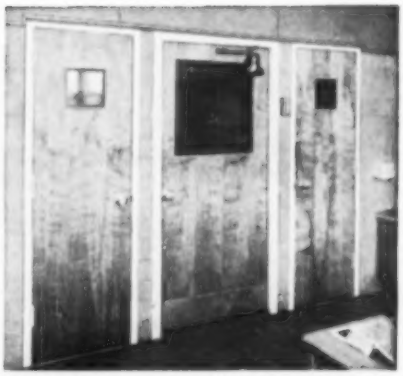
WELDWOOD HARDWOOD PANELING, for instance, adds the warmth and beauty of natural wood to every room in the school, yet it never needs to be painted and is guaranteed for the life of the building.

ARMORPLY† CHALKBOARD has many advantages over the old "blackboard." You can save up to 30% on installation because it requires no frame. Resists cracks and scratches, takes chalk beautifully, and its pleasing green surface is easier on young eyes. It leads a double life too! Armorply Chalkboard's porcelain-on-steel face* attracts magnets and becomes a visual educational aid.





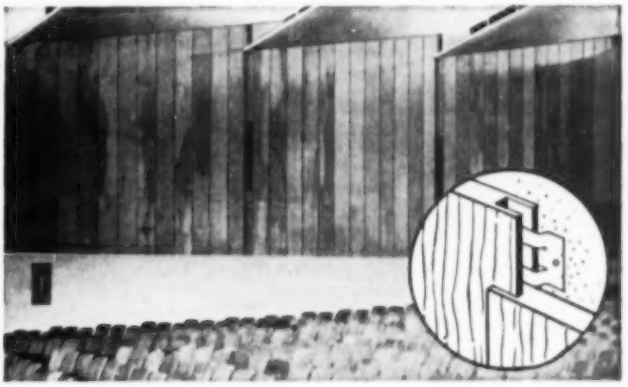
LOOK WHAT'S HAPPENED to the old "blackboard"! It's now a pleasing, eye-easy, green, Porcelain-surfaced steel attracts magnets! Won't scratch, chip or crack. Saves up to 30% on installation because it needs no frame. Sketch shows how easily it attaches to wall. Guaranteed to last the life of the building. Fairlawn Junior High School, Fairlawn, New Jersey. Architect: Arthur Rigolo. Installed by: Atkins & Co.



THE LIGHT cut-outs will not weaken the rigidity of these birch Weldwood Stay-Strate Doors. The Weldwood Fire Door carries the U. L. label for class B and C openings. Lake Hiawatha School, Troy Hills, N. J. Architect: Emil A. Schmidlin. Gen. Contr: A. Lowe & Co.

DURABLE crack-free Novoply-walled corridor. Cuts maintenance costs. Novoply panels are quickly installed—speed up building time. Unqua School, Massapequa, L. I., New York. Architect: George J. Dippell. Gen. Contr: Schumacher & Forelle, Inc.

THE FUNCTIONAL beauty and adaptability of Weldwood products is the keynote here. Unique closets were made from sturdy Oak Weldwood. Holmes School, Darien, Conn. Architects: Ketchum, Gina and Sharp. Gen. Contr: Sam Grasso Co. Inc.



THIS RICH LOOKING auditorium wall was achieved with prefinished birch Plankweld®. Insert shows how simple it is to erect Plankweld. Metal clips hold narrow-width panels to wall; edges are grooved and overlap to conceal nails. Available in five handsome hardwoods; no painting or on-the-job finishing necessary. Attaches to any surface. Hillside School, Montclair, New Jersey. Architects: Starrett and Van Vleck and Reginald Marsh Associates. Gen. Contr: Frank W. Bogert.

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THEN THERE'S THE NEW WELDWOOD product—Novoply®. It's a new, beautiful, low-cost wood panel which can be quickly and easily installed. Most dimensionally stable wood panel ever produced—is practically warp-free. Wax it, stain it, or finish it natural. It thrives on rough treatment. Good two sides, it's perfect for wall paneling, sliding doors, partitions, built-ins and furniture.

WELDWOOD STAY-STRATE DOORS and Weldwood Fire Doors are renowned for the mineral core used in their construction. The Weldwood Fire Door carries the Underwriters' Laboratory label for class B and C openings. Both doors are available in a variety of beautiful woods and are guaranteed for the "life of the installation" against warping, shrinking or swelling even under the most adverse conditions.

Contemplating school modernization or new construction? Then look to Weldwood for materials that guarantee beauty as well as long life. 60 United States Plywood or U. S.-Mengel showrooms located from coast to coast will welcome your visit.

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Added Decorative Possibilities with the Stylist are available by applying attractive wood grids to screen and sash inserts. Three grid styles—"Circle" (left), "Diamond" (center), and "Square" (right). Easily installed.

Ask your retail lumber dealer about the new Continental Stylist All-Weather Decorator Door or write The Wabash Screen Door Company, 310 S. Michigan Avenue, Chicago 4, Ill.

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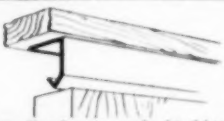

Low Headroom—only 1"- 1¼" ALUMINUM Track serves as trim, with no painting necessary!

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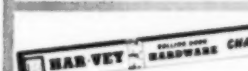

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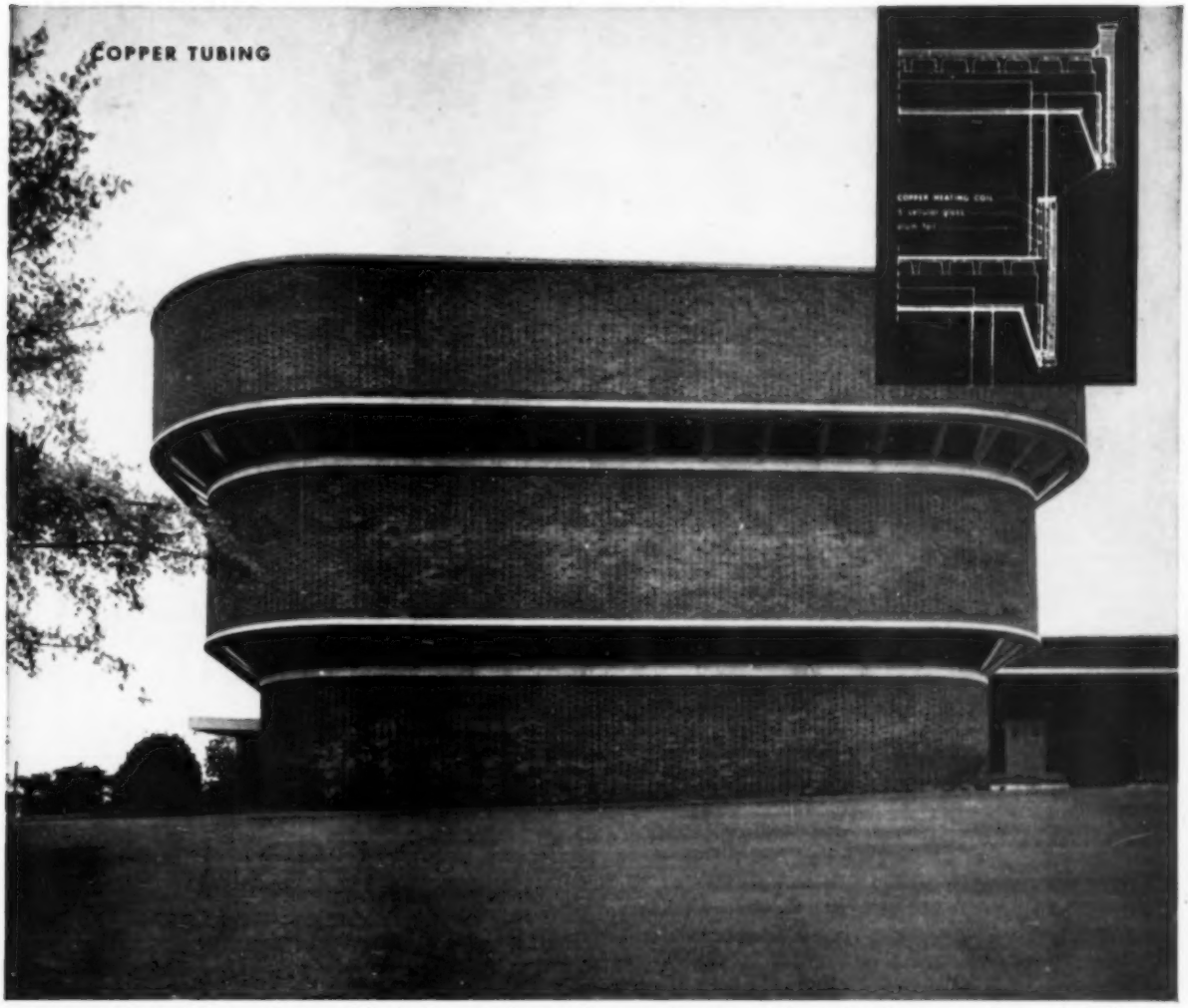

NEW HOME OFFICE of Springs Cotton Mills. Architect: Robert & Company Associates, Atlanta, Ga. Contractor: George A. Fuller Co.

Copper Tubing . . . in walls that "hang in air"

The ability of architectural designers to solve unusual construction problems is proved again in this new home office building of the Springs Cotton Mills located in Ft. Mill, S. C. The angled windows desired by the owner require that the walls be supported by cantilever construction, thus creating the illusion of being suspended in mid-air.

COPPER TUBING was specified for radiant heating panels that are installed in walls.

These walls contain the radiant panels that provide winter comfort for office workers. From both a cost and design basis, copper tubing fits this type of heating system perfectly. It is easily installed because it comes in long lengths, requires fewer fittings and bends easily to follow wall curvatures. Connections, where necessary, are made quickly and securely even in the hard-to-get-at spots by using solder-type fittings.

Architects will always find that copper tube for radiant heating panels offers their clients the "final touch" to modern design . . . that copper means lower installation costs, longer service life and lower upkeep. Publication C-9, "What Most People Want to Know About Radiant Panel Heating" will answer any questions your clients have on panel heating. For free copies, write to *The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.*

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The House... and the Art of its Design

by ROBERT WOODS KENNEDY

Written in a delightfully engaging, often humorous style, this unusual new book brings you a complete review of the architect-designed house—its conception and design scheme as determined by the needs and activities of its inhabitants.

The book begins with some much-needed definitions which point out the many differences between the architect-designed house and other types of dwelling units. The people who live in houses—the wives, husbands, babies, children, teen-agers, grandparents, servants—are then skillfully analyzed as to their demands on a house, both as individuals and as a family group.

The author shows how these demands are translated into a plan for a house—how they affect the design and arrangement of rooms, furniture and equipment—and the relationships between this family group and their architect. Separate chapters then deal with the important roles of style, environment, site, structure and expression in the development of a contemporary house that reflects the ultimate in beauty as well as technical advantage.

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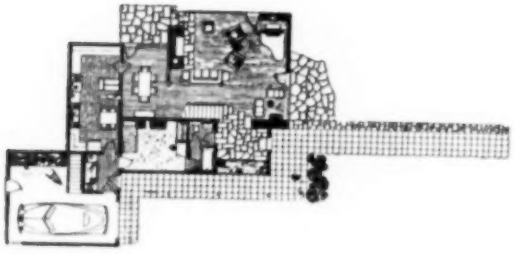

Notice this topic-by-topic chapter arrangement—

1 **EXPLANATION**
The architect-designed house as distinct from all others

2 **SILHOUETTES**
The people who live in houses and what they want of them

3 **FAMILIES**
People together form a family which in turn makes still other demands on the house

4 **LIVABILITY**
How people's and families' demands get translated into a scheme for the house

5 **ACTIVITIES**
How what we do in houses should affect their plan, furniture, arrangement and equipment

6 **RELATIONS**
What kind of people are architects and clients, and how do they get along together?

7 **PROCESS**
How the architect and client react to the crises of the building period

8 **STYLE**
A dim view of both Modernism and Traditionalism, and a plea for a simple contemporaneousness

9 **ENVIRONMENT**
How the surroundings of a house should affect its style

10 **SITE**
How the site of the house should affect its plan and concept

11 **STRUCTURE**
The structure of the house is like the human body, and should be conceived of as such

12 **EXPRESSION**
The excitement of architecture is the result of analogies we make between buildings and ourselves

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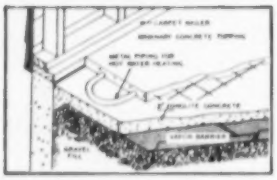

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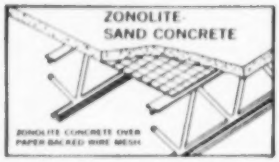

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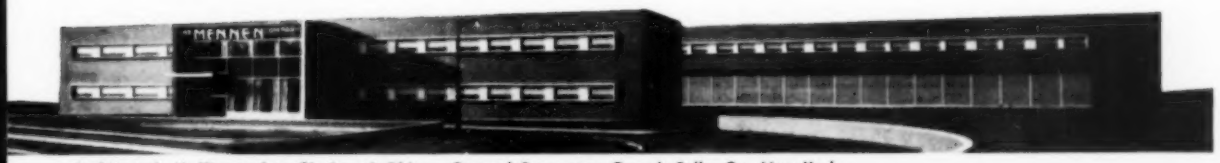

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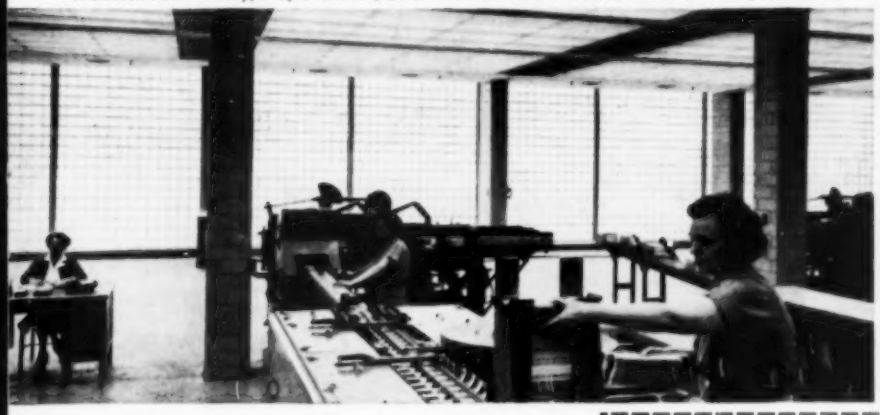

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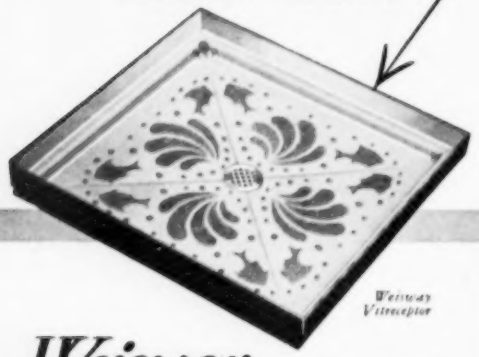

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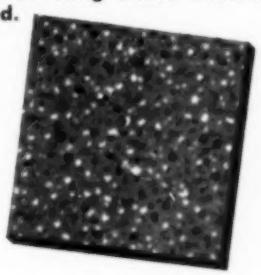

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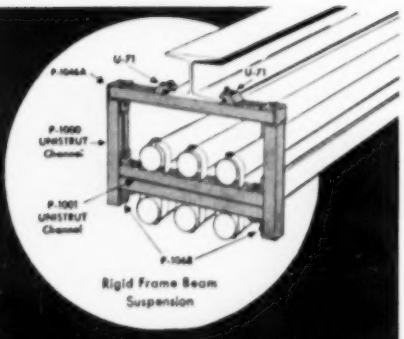

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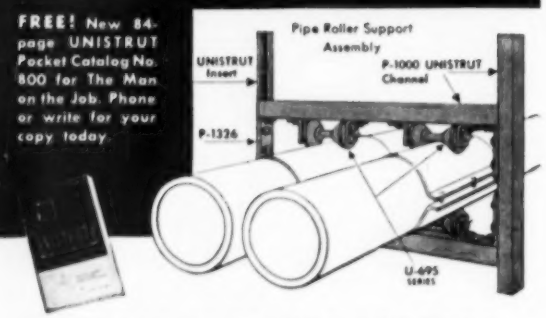

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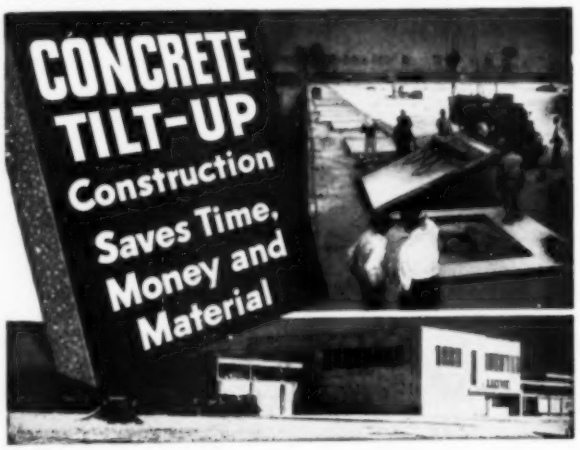

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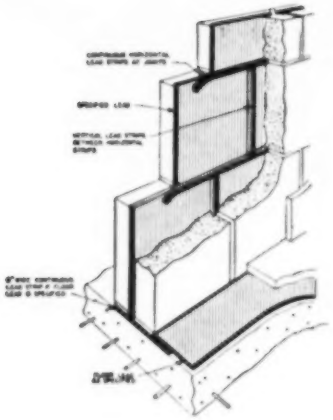

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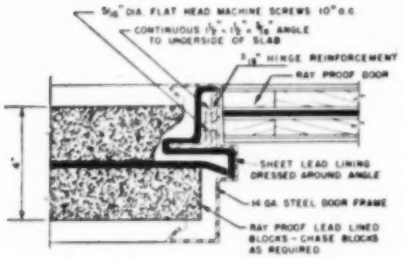
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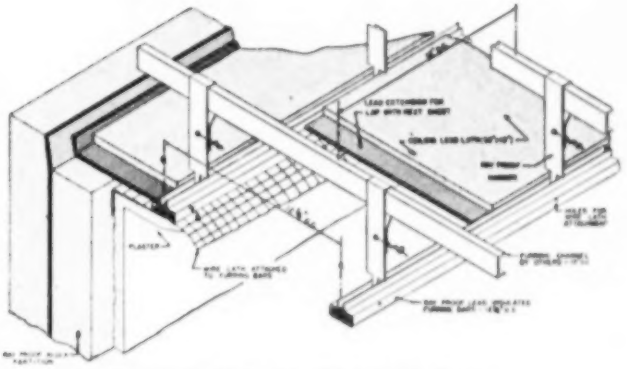

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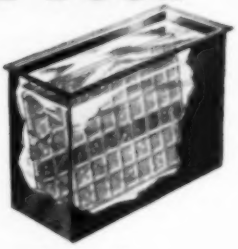

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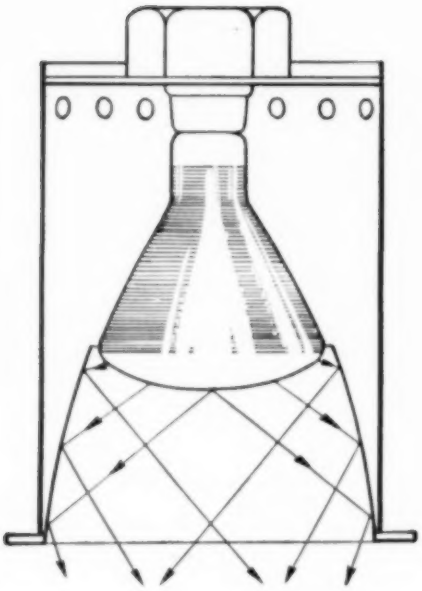

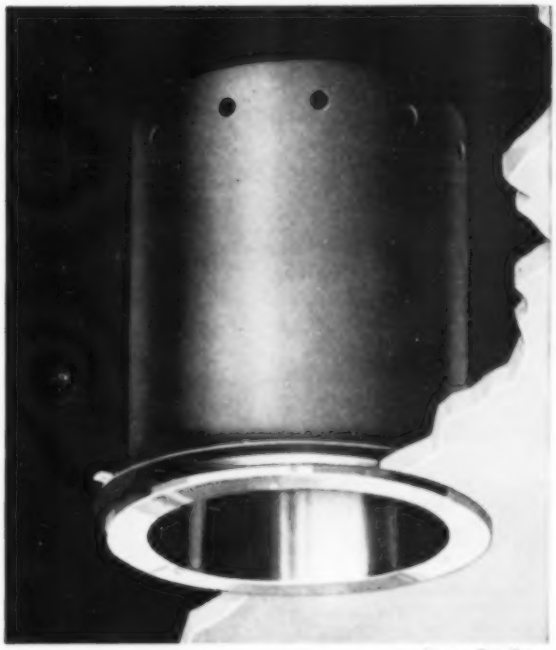

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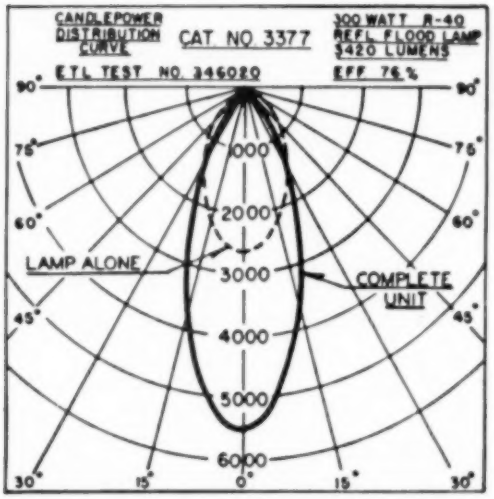
Elipticone

DOUBLES LIGHT OUTPUT



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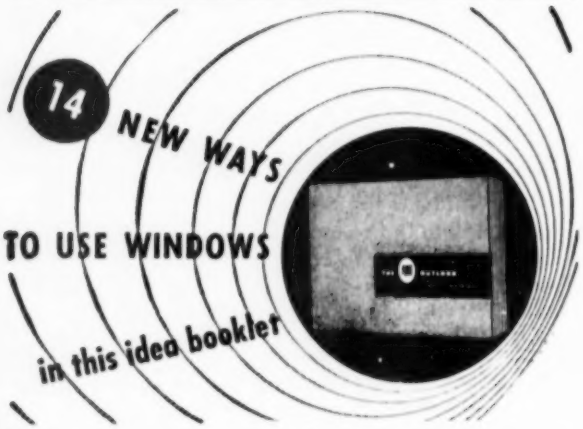

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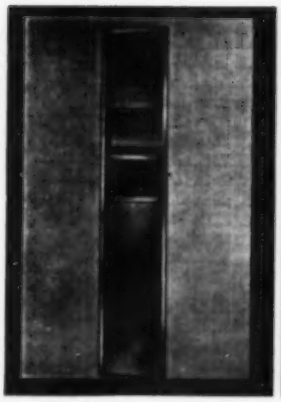

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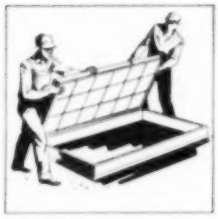

Kimble Toplite panels are factory-fabricated for uniform quality, and low installation cost. They are made up of an insulated aluminum grid into which special hollow glass units are set. The glass units themselves are $10\frac{5}{8}$" square by 3" thick, and are installed in the aluminum grid 12" on centers. Panels are weatherproof with no porous materials exposed to the weather.

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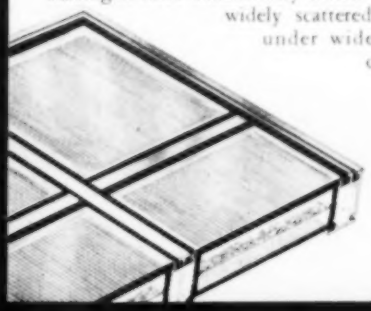
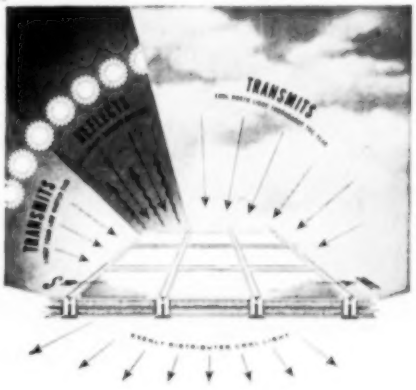
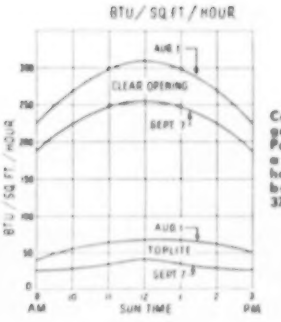




SELECTIVE CONTROL OF DAYLIGHT

Kimble Toplite Panels are selective in their light transmission. They transmit a high percentage of the light from the low winter sun and from the north sky but reflect much of the direct light from the high summer sun. Light-controlling characteristics eliminate glare and distribute daylight throughout the room so that concentrations of light are eliminated.



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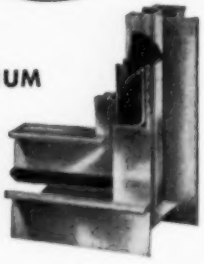

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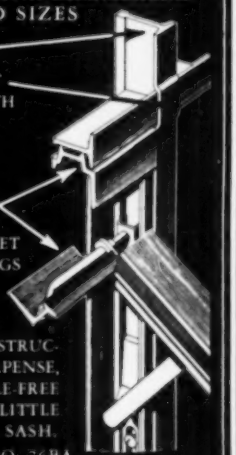
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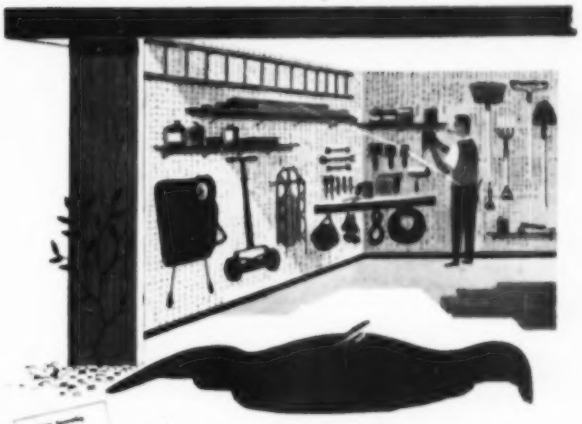

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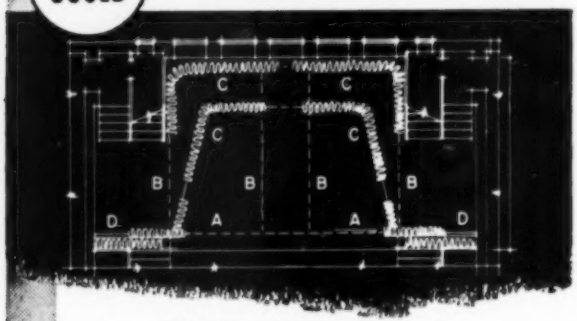

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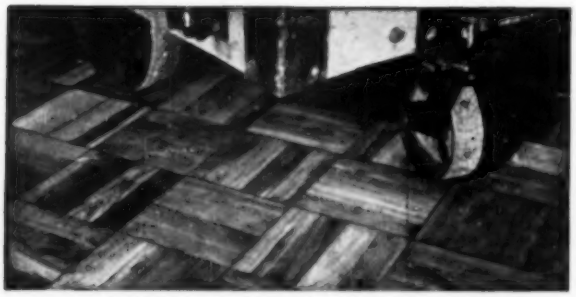

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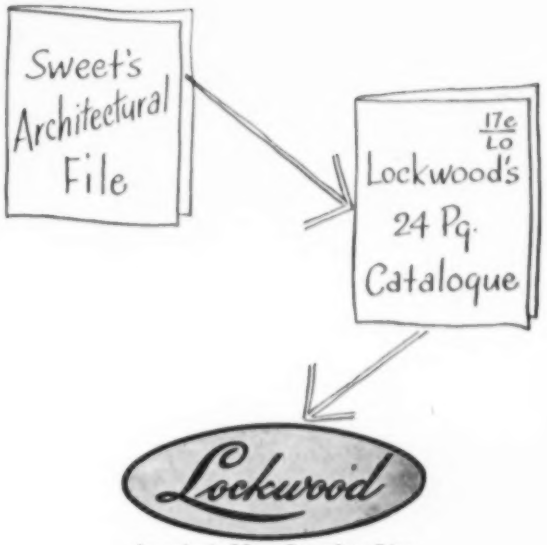

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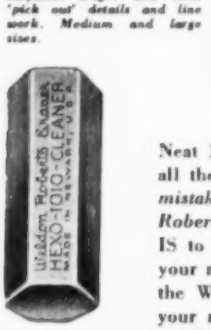

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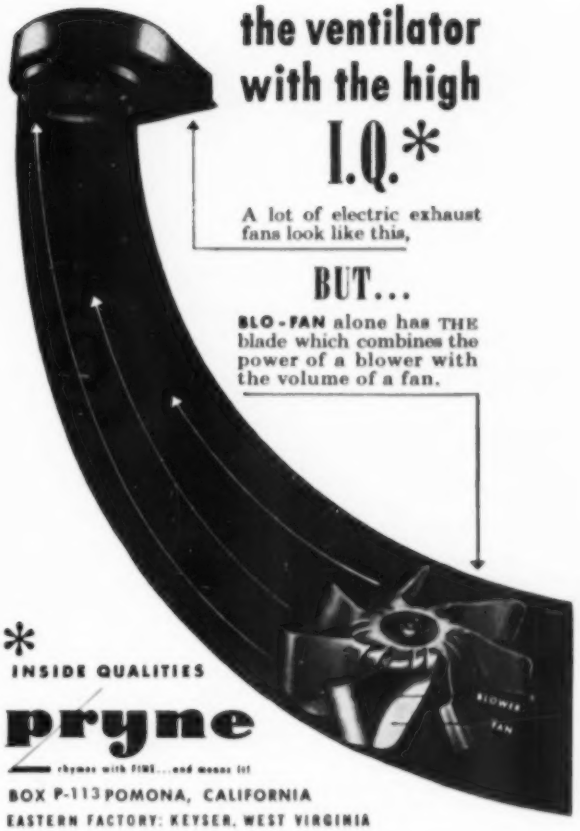

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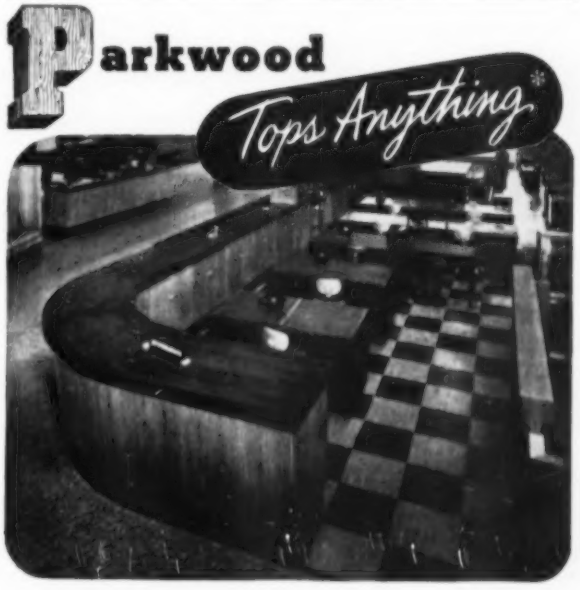

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THE AUTHOR

JEFFREY ELLIS ARONIN is a Master of Architecture and a member of leading architectural societies in the United States, Canada and Mexico, in which countries he has traveled extensively. He has been actively engaged in the study of climate and architecture for several years, formulating a pattern of information which would help architects design for any climatic conditions. In the course of his work he has visited or corresponded with prominent scientists, architects and other interested parties all over the world; accordingly, his book can be considered indeed universal in approach.

HERE is the very first book ever published to show in complete detail the effects of climate upon architectural design! It gives the architect, designer and builder an indispensable working knowledge of how to plan for any given set of climatic conditions—picking a site, keeping a dry basement and a dry area around the house, avoiding fogs, designing for comfortable summer sleeping, and avoiding snow shoveling chores are just a fraction of the problems discussed.

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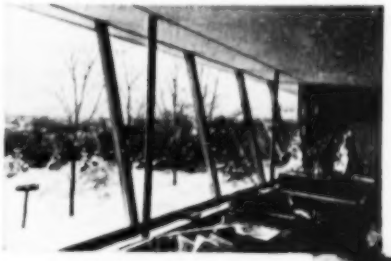

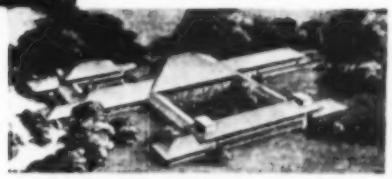

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P.S.

Observation for the month: a peculiar thing is happening in U.S. architecture just now. Paradoxically, as the general level of design improves, the architectural scene is less exciting. The reason for this is that the gap between the general practitioner and the great designer is closing, and the distinguished architectural solution does not stand out so sharply and clearly above the field. A group of us have been looking at the entries submitted in one building-type category of our Awards Judgment, and the common reaction was: many, many fine designs, and no *outstanding* solutions. I have felt the same thing in looking at completed buildings recently, and a number of observant architects have remarked on the phenomenon to *me*.

•

The paragraph above is the editor's thought for the month. I have been wondering recently why people want to be architectural editors. You don't get much sleep, you have to go to press conferences, and the months roll around *so* quickly, with the need for new thoughts and new observations.

Actually, I know why. There is a great satisfaction in the job of documenting architectural advances. And then a great return is the wealth of personal friendships and the relationships you establish — the many close friends you make—like the one who arrived in town about midnight last night, went on the town because he was exhilarated (and it was obviously too early to go to bed) and at 3:35 a.m. decided to call good ole Tom Creighton an shay hello. Wonderful friends, who will listen by the hour to observations like the one above, and roll them around for hours of conversation—tonight in New York, tomorrow night in Philadelphia, the next night in Atlanta, then on to Houston, Dalias, Colorado Springs, Denver, Chicago.

"A peculiar thing is happening in architecture," I say, "It is getting better. . . ." And some of my friends nod, and some scoff, some listen and some jeer. The editor of The Modern Architect will speak at the next Chapter meeting on *What is Happening in Architecture*. "A peculiar thing is happening in architecture right now. . . ." One of the architectural editors is in town and we're going to have a few people up at the house tonight. "Tom, what's happening in architecture around the country?" And there I go again, "A peculiar thing's happening right now. . . ." Over the bar at the Drake, between courses at committee lunches, in talks with students.

I remember a Memphis architect telling me that he envied me these trips, and asking if he could go along on one. We started out from Memphis and drove (after an evening at his house, discussing what was happening in architecture) and stopped in half a dozen towns, calling on architects, looking at architecture. He started off fresh and interested; he took architectural pictures along the way, he made notes as we talked to architects about their methods of practice. Day after day, evening after evening, we lived with, talked about, dissected and tried to put together again the architectural product in the United States. "A peculiar thing is happening in architecture right now," we'd say, with my friend chiming in avidly, because he'd seen as much as I had on this trip. Then after a while he began to quiet down in these discussions, and he began to slow down during the day. When a group got together in a new town he'd look frightened, and I could hear a sigh slip out when someone asked, "Tom, what's happening in architecture around the country?" Once I saw his fist clench when I started that month's version of, "Well, a peculiar. . . ." He got gruff with me at nights when we turned in, in those so-similar hotel rooms. He began looking at the calendar, and then at his watch.

Finally, one day in a Texas town, he disappeared of an afternoon, and didn't turn up for dinner, which was a quiet gathering in one of the restaurants to discuss trends in architecture. When I got back to the hotel, I found a note from him:

Dear Tom: I guess I didn't tell you, my grandmother lives just across the border, and I think I'd better go see her for a while. She's getting old. I'm afraid I've taken the car. Hope you can arrange the rest of the trip O.K. I'll send you prints of those pictures I took in the first days. Al. P.S. Damned if I know how you can take it.

Damned if I know how the architects can take it. I love it. Next week I'm off on another trip, and I have several new observations saved up. A peculiar thing is happening in architecture right now, you know.

•

One perculiar thing is *not* happening right now. I don't see many signs that the architect is asserting his strength as much as he should, and as much as he could. I'm a mite disappointed by the publicity campaign of the AIA—it seems to me to be moving very slowly and in very obvious directions. I suspect that one manufacturer—Minneapolis Honeywell—has done more to build up the architect in the public's mind, with a very swell advertising series, than any professional group has done recently.

I've been talking to two people, very different people, in the last week, both of whom are rather shocked at the limited prestige of the architect in the United States. One is a lawyer, getting more and more into architectural problems, becoming more and more convinced in his own mind of the social, economic—and legal—importance of the architect. He's rather stunned to find that so many professionals hold themselves in such low esteem. He can't understand why they don't assert themselves more; he is shocked at the lack of appreciation of the architect's important role in the business community.

The other conversation was with Willem Dudok, Dutch architect and town planner, whom many of you will hear and meet as he tours the country under auspices of the AIA. He is an interesting and charming person, modest despite his achievements at Hilversum and elsewhere, firmly convinced of the need for putting into effect planning principles (town growth limited by greenbelts, organic growth rather than ribbon developments, land space for everyone, harmonious townscapes through height and character of buildings) and realistically recognizing the need for controls to accomplish this rather than the haphazard development that results from immediate money-return influences.

The interesting thing, in talking to Dudok, was to realize that he has a different concept of the town planner and the architect than ours. I don't believe it ever occurred to him that the architect-planner might not have the *power* to effect good planning; to him it seemed simply a matter of whether that individual *wanted* and *understood* good planning. It seemed to come as a surprise to him that a real-estate developer, a business entrepreneur, a powerful client, or even a builder *per se*, could have more influence and control over the way a town grows—in broad outline and in detail — than an architect-planner. It seemed difficult for him to understand that a community—the people in it, and its civic leaders—might not want to put the architect-planner in that position of authority which would allow good planning and good design to be carried out.

Not only new planning, but redevelopment as well, too often is controlled by builder-developer "planning" rather than social, logical-growth planning. I have heard of two important instances of it in the last week; in both cases the design professionals are fighting losing battles. What is missing is not knowledge or ability —it is prestige and public understanding.

Thomas H. Creighton

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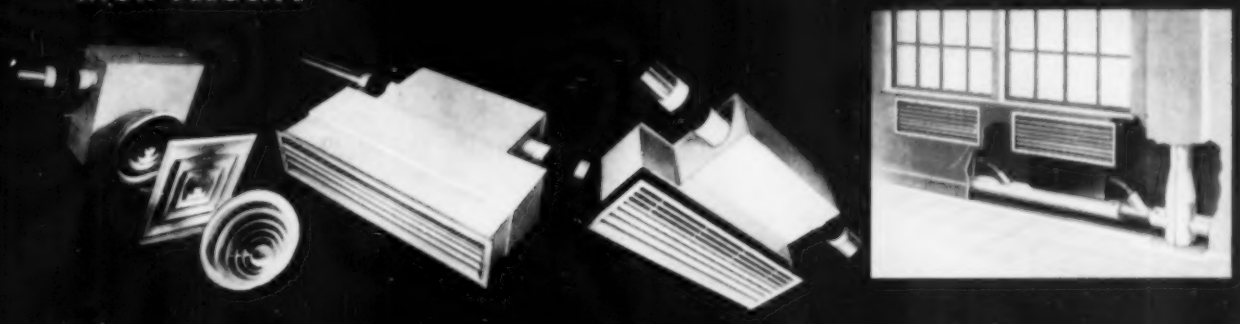

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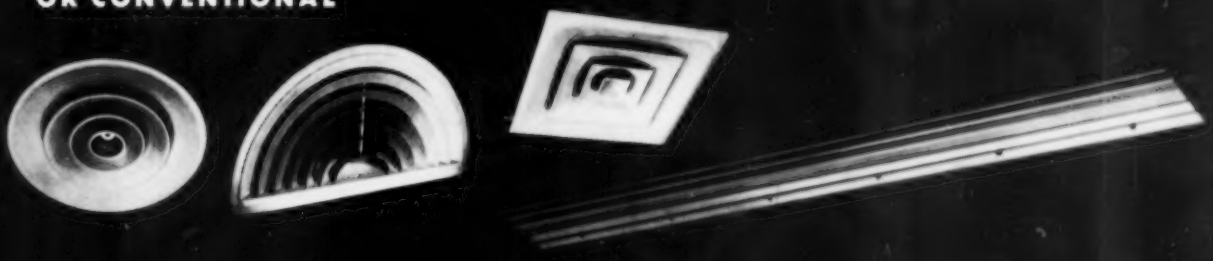

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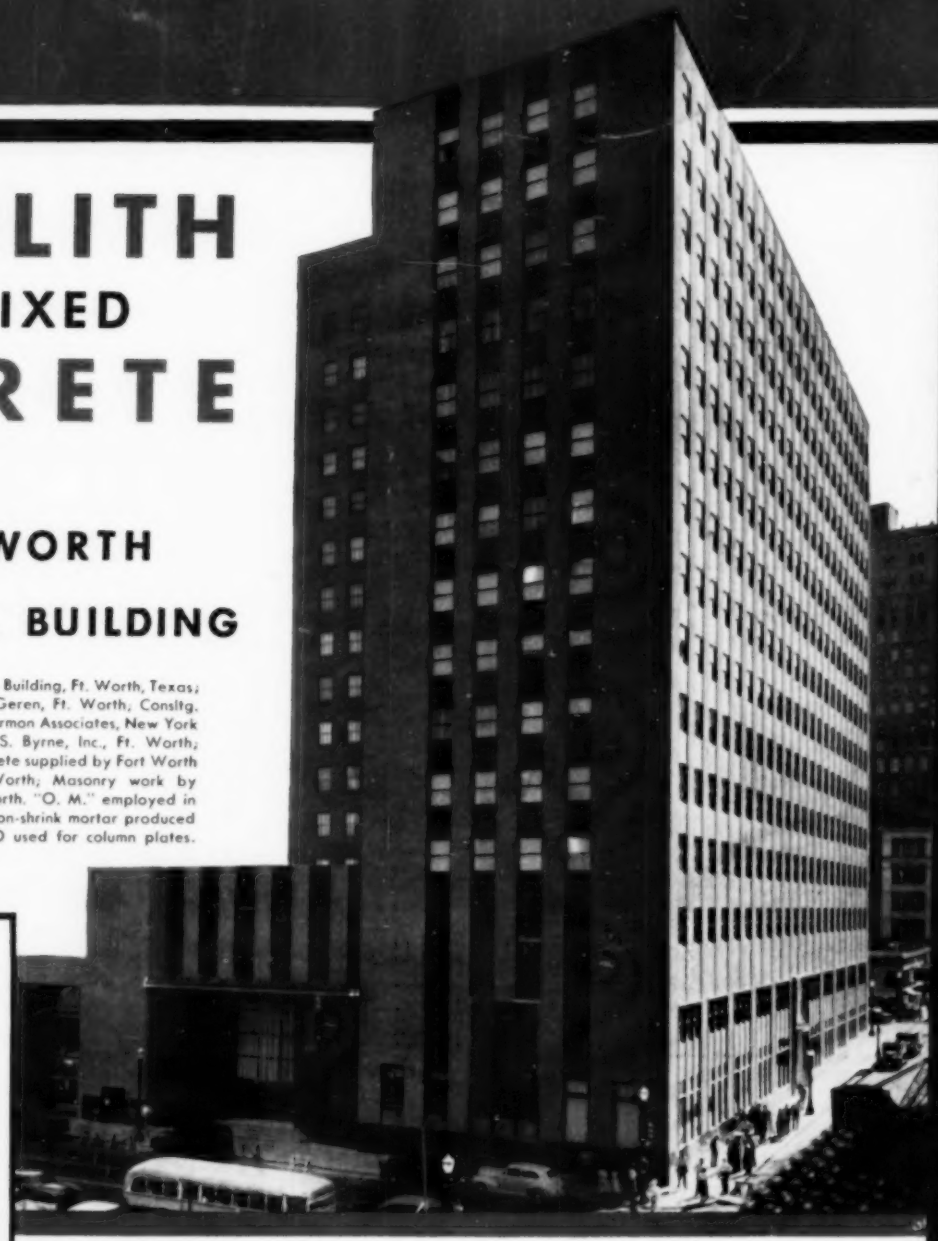

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